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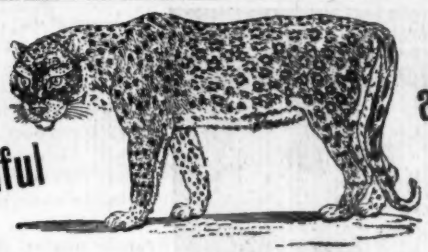

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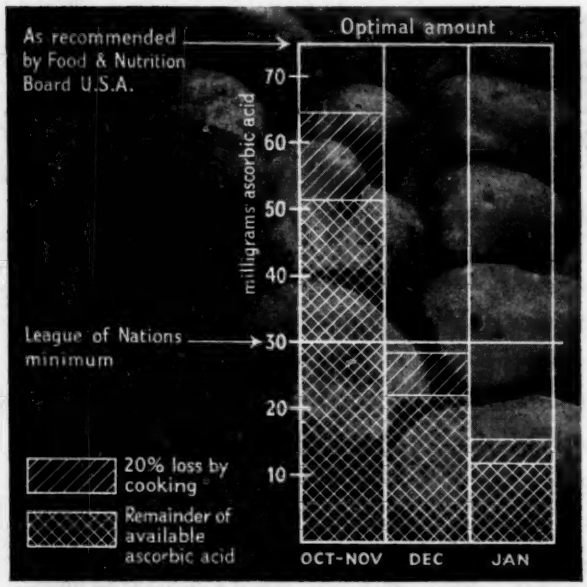

Vitamin C provided by total rationed foods including potatoes compared with the accepted requirements.

"A question that needs immediate attention is whether the time has now come for the general issue of ascorbic acid tablets . . ."

(*The Lancet*, Nov. 15, 1947, p. 730).

Since the potato is regarded as an important source of vitamin C, the restricted weekly ration of 3 lb. for one normal consumer means a greatly reduced intake, not easily made good during the winter months by alternative vegetables and fruits.

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Ampoules: 2 c.c. (100 mg.) and 5 c.c. (500 mg.)

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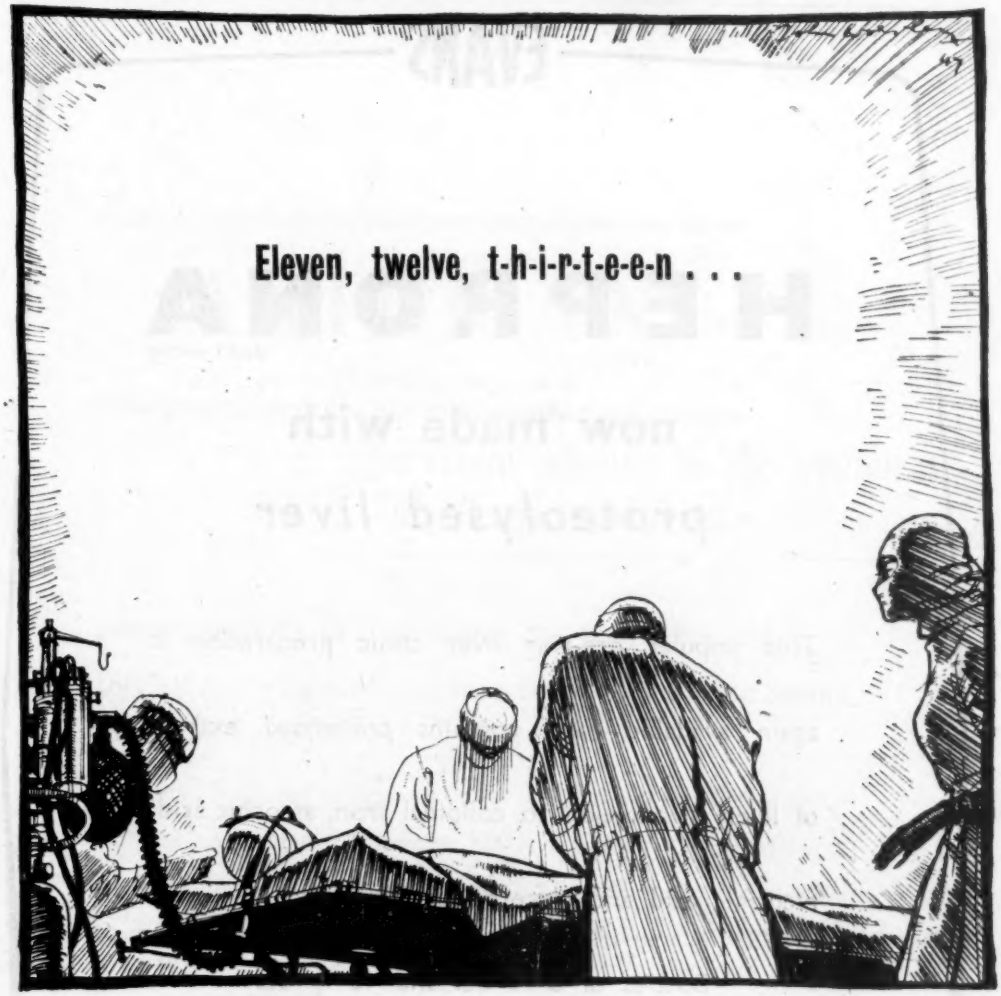

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VISCERAL PAIN *

HENRY COHEN
M.D. Lpool, F.R.C.P.
PROFESSOR OF MEDICINE IN THE UNIVERSITY OF LIVERPOOL

THE cardinal paradoxes of visceral pain spring from two long-established facts: first, that whilst pain is the commonest symptom of visceral disease, organs such as the stomach or heart when subjected to gross insults—cutting, crushing, or burning—appear to be insensitive; secondly, that pain arising from visceral disease may be located at a distance from the affected viscus, as in the left arm in heart disease or the testis in renal disease. Attempts to elucidate the enigma of visceral pain have led to investigations which fall into five groups: (1) the nature of the adequate stimulus; (2) the site of its action; (3) the distribution of pain nerve-endings in the viscera; (4) the peripheral and central nervous pathways which lead from viscus to sensorium; and (5) the "mechanisms," both physical and psychological, involved in the *reference* or *localisation* of pain.

In my Lettsomian lectures for 1944 (Cohen 1948) I have reviewed the data on these five aspects of visceral pain, traced the history of current hypotheses, and critically assessed their shortcomings. My more limited purpose here is to discuss how the intensity and localisation of visceral pain are affected by modifying the sensation of skin and deep somatic tissues.

The earliest observations in this field were recorded by Lemaire (1926). In four patients he relieved the pain of gastric ulcer and other intra-abdominal lesions by local anæsthetisation of the abdominal wall. His observations were confirmed and extended by Weiss and Davis (1928), Morley (1931), Theobald (1941), and others. These results, in the main strikingly uniform, leave no doubt that pain arising from viscera can be abolished, diminished, or differently located when the nerves of those somatic segments corresponding to the visceral nerve-supply are anæsthetised.

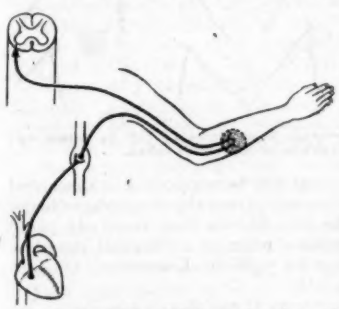

Fig. 1—Penfield's (1925) explanation of reference of anginal pain.

To explain the effects of local anæsthesia and the somatic reference of visceral pain, Penfield (1925) and Davis and Pollock (1932) have suggested that the impulses arising from a viscus cause pain by inducing peripheral changes (vascular or metabolic) which stimulate the sensory nerve-endings in the skin and deeper tissues, and that pain is then transmitted by the usual pathways (fig. 1). That this hypothesis is untenable is suggested by cases published by Wallace Jones and myself (1943). Both patients had had the left arm amputated and suffered from a phantom (figs. 2 and 3). Both, when they later developed angina, located their pain to the phantom. Such reference clearly excludes stimulation of a peripheral nerve-ending, by any mechanism, from playing a significant rôle in the genesis of visceral pain. Moreover, in both these patients anæsthetisation of the brachial plexus, care being taken to ensure that the sympathetic ganglia were unaffected, led to abolition of the arm component of angina in mild attacks, and its lessening and later appearance in severe attacks (fig. 4). The second patient had a "pin-head" neuroma at the site marked x (fig. 3), pressure on which caused anginal pain. Anæsthetisation of the neuroma abolished the arm component of the angina on mild effort. The evidence is now overwhelming that interruption of nerve paths between the periphery and the central nervous system in those somatic segments which are homologous with those of the diseased viscus abolishes or diminishes the pain or modifies the time of its appearance.

EFFECTS OF INCREASED SENSITIVITY

But the contrary influence of *increased* sensitivity of somatic tissues on visceral pain also has to be considered. It is within the experience of all clinicians that constriction of the left arm with a sphygmomanometer band may excite an anginal attack, but the possibility of the cause lying in reflex coronary vasoconstriction cannot here be excluded with certainty. Stronger evidence is afforded by many cases, of which the following is typical.

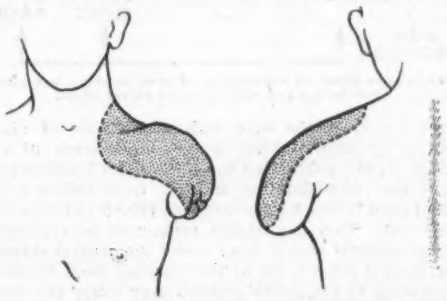

Fig. 2—Area of anæsthesia produced by left brachial-plexus block in patient whose left arm had been amputated.

A patient with three years' history of effort angina referred his pain to the substernal region. He fractured his left elbow, which when fixed in plaster was free from spontaneous pain; but for several weeks after the injury walking brought on pain in the damaged elbow, followed by substernal oppression and a sensation of constriction of the chest.

These clinical observations led to a trial of the effects of experimentally induced hypersæsthesia in superficial and deep somatic tissues on visceral pain. Four patients with effort angina were blistered over an area of 4 sq. in. with a vesicant plaster on the inner side of the right elbow or the right mammary region, where they had not previously experienced pain (fig. 5*a*). When their angina was excited by exertion, all complained early of intensification of pain in the blistered area. In three of these patients 2 ml. of 5% saline was injected into the back muscles 2 in. to the right of the 5th dorsal spine (fig. 5*b*); this gave rise to a diffuse deep-seated pain

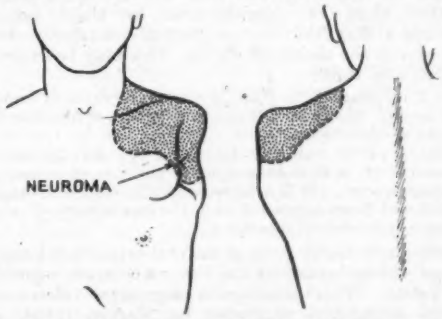

Fig. 3—Position of neuroma in patient whose left arm had been amputated.

* A paper read at the International Conference of Physicians, London, on Sept. 12, 1947.

with vague boundaries. Two hours later, when the pain so induced had passed, exertion caused its reappearance, though no pain had in previous anginal attacks been felt in this area. The patients chosen for these clinical experiments were intelligent and coöperative, and I exclude unconscious suggestion on my part from playing any part in the results.

DISCUSSION

It is evident that the blocking of peripheral pathways diminishes, whereas the sensitisation of somatic

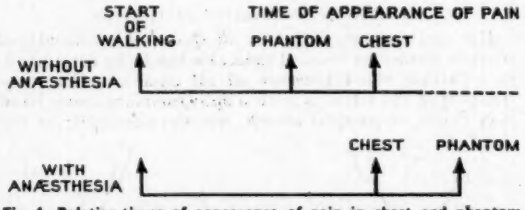

Fig. 4—Relative times of appearance of pain in chest and phantom limb before and after brachial-plexus block.

tissues increases, the ease with which pain of visceral origin is excited. What is the implication of these findings on the postulated mechanism for visceral pain? Clearly the older theories, and the more recent suggestions of facilitation by convergence (Ruch 1947), must be abandoned. Two hypotheses remain to be considered: (1) that visceral stimuli may lower the central threshold to peripheral stimuli (as in the classical Ross-Mackenzie hypothesis), or peripheral stimuli may lower the central threshold to visceral impulses; and (2) that the peripheral stimuli augment those from the viscera. Both Theobald (1941) and Jones (1943) have suggested that a principle of summation of stimuli may be involved in visceral pain, but neither has faced the inevitable corollary which I suggest must be postulated if we are to present a consistent hypothesis. This is that from the endings of all pain nerves, visceral and somatic, there arises normally a constant regular stream of subliminal impulses which pass to the central nervous system. It is true that no neurophysiologist has produced evidence supporting this inference, but none has as yet applied himself to the problem. Sarah Tower (1943) has, however, observed spontaneous and rhythmic discharges in pain fibres and terminals, of 1–8 a second, sometimes for hours. If this be accepted as normal, many hitherto irreconcilable observations on visceral pain can be reasonably explained. Normally these impulses are subliminal; they do not cause pain unless disease lowers the threshold. This raises the question of whether there is an organic peripheral component of the pains which the hypersensitive neurotic feels "all over the body." Pain impulses from a viscus which are augmented in intensity will pass the threshold only if, whether alone or supplemented by those impulses normally arising from homosegmental somatic structures, they exceed the threshold value. This may be expressed symbolically thus:

Let K = threshold for pain, A = normal stream of impulses from somatic tissues, and B = normal stream of impulses from homosegmental viscera.

Then A + B is normally less than K; but K may be exceeded if (1) A is increased, as in pressure on neuroma of amputation scar; (2) B is increased, as in cardiac ischæmia; or (3) A and B are increased, as in the concurrence of cardiac ischæmia and subdeltoid bursitis.

Almost constantly pain of visceral origin is referred to an area which shares with the viscus a common segmental innervation. This homologous segmental reference of visceral pain, first suggested by Martyn (1864) and profitably used by Head (1893) in mapping out the segmental nerve-supply to the viscera, was beautifully demonstrated by Lewis and Kellgren (1939), who emphasised the artificiality of the supposed distinction between visceral and somatic pain. Since the metamere is the phylogenetic unit of the organism, and since the arrangement of pain fibres in cord, brain-stem, and thalamus is segmental, it is highly probable that pain impulses arising from the same segment will reach a functionally related area of the sensorium, and, when integrated with the cortical pattern of the body image by neural mechanisms at present largely unknown, will be localised selectively in that segment. There is now considerable evidence showing that with repeated stimulation such localisation becomes more precise (Wolf and Wolff 1943), thus suggesting that there is an inborn faculty for a vague segmental localisation of deep and visceral pain (else why the fairly constant localisation of referred pain in angina and biliary colic?) which is amenable to learning by experience.

The explanation of the effects of local anæsthesia and hyperæsthesia is, on the hypothesis here presented, clear. If, on the one hand, the normal impulses streaming up the somatic-pain nerves contribute significantly to the sum of pain impulses necessary to pass the threshold, nerve block will abolish the pain; if, on the other hand, the impulses arising from the viscus are above threshold value, the block may diminish the intensity of the pain or alter its maximal site or course of development, but will not abolish it.

This hypothesis has the additional merit of explaining the more frequent failure of subcutaneous nerve block to lessen visceral pain, as contrasted with segmental nerve block. "Without hypothesis," wrote Charles Darwin, "there can be no useful observation." The

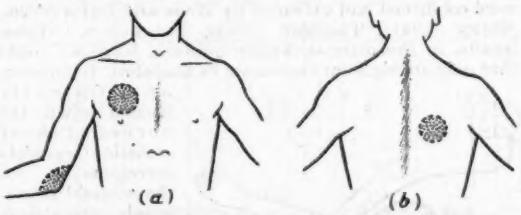

Fig. 5—Areas of experimental hyperæsthesia: (a) by blistering; (b) by injection of hypertonic saline.

hypothesis here presented will be supported or discarded when evidence is forthcoming from the neurophysiologist on the validity of the assumption that normally there is a constant centripetal stream of subliminal impulses from the nerve-endings for pain in all tissues. On him rests the burden of proof.

SUMMARY

Referred pain of visceral origin can be abolished or diminished, or its location may be changed by anæsthesia of homosegmental areas.

It can also be produced, increased, or moved by hyperæsthesia of homosegmental areas.

The explanation of these two facts seems to be that there is a constant stream of subliminal impulses from visceral and somatic nerve-endings to the central nervous system.

Normally the sum of such visceral and somatic impulses is subliminal. The threshold value is exceeded, and pain is caused, only by the abnormal increase of either one or both of these two kinds of impulse.

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(*Continued at foot of opposite page*)

A COMPREHENSIVE STUDENT-HEALTH SERVICE

A. H. MACKLIN
O.B.E., M.C., M.D. Manc.
PHYSICIAN TO THE STUDENT-HEALTH SERVICE, UNIVERSITY OF ABERDEEN

THERE should, in my view, be a full student-health service in every university. Complete health examinations on entry and in subsequent years are not enough; the service should include care of the student when he is sick or needs medical attention of any sort, and, based on these two, a careful inquiry into the factors which affect mental and physical health in this particular age and occupational group.

The students are likely to be more interested in, and to make fuller use of, a service which looks after their troubles and illnesses and, to their way of thinking, has a practical value than one which they may rightly or wrongly suspect of using them as subjects of a statistical inquiry. Without such a service it is difficult to see where accurate information about morbidity, necessary for the assessment of the health and sickness of any group, is to come from.

It is when students are sick and seeking help in trouble that one gets the best insight into their background. In some cases it is the only time when one will get to know anything at all of the more intimate affairs which can have such an important bearing on their mental and physical make-up. I have found that replies to stereotyped questionaries, particularly written ones, are often inaccurate and misleading. A glaring example of this is the replies made to the question: "What games do you play and what form of exercise do you take?" A student will fill in rugby, tennis, rowing, hiking, swimming, squash, badminton, cricket, country dancing, and hill climbing, when what he means is that he has done each of these things once and, since coming to the university, has taken practically no physical exercise at all.

If the student cannot be relied on to answer such simple questions as these accurately, still less valuable will be his replies to more intimate inquiries. In the ordinary way of examination it is very hard to get "inside" a student or to find out much of what constitutes his social and environmental background. This may apply more to the northern Scotsman with whom I have had to deal, but with any group of students it is important to ensure that information given on what are often delicate matters is truly representative before reducing it to figures. As a means to obtaining really valuable information, the doctor-patient relationship should be developed rather than the impersonal stereotyped questionnaire.

It is very important that the physician in charge of the student service should have an absorbing interest in and liking for his work. A long series of routine examinations is apt to become very tiring, and indeed boring, to the detriment of the standard of work. It will prove much more interesting if the day is enlivened with the care and treatment of sick students, and the health examination will mean a great deal more if it is to be the basis of possible further personal care. The physician should be able to feel that he is in a position to carry out, from start to finish, the very highest standard of medical work. This surely is a sine qua non of a university service, and it will not be achieved if the service is broken or disjointed, or the physician's interest is subjected to the strains of a too limited routine.

THE ABERDEEN SCHEME

Aberdeen University and the Aberdeen Royal Infirmary came together to make the student-health service a combined undertaking. The physician in charge is expected to deal with the nurses and residents of the hospital in the same comprehensive way as he does with university students. To regularise the position the holder of the appointment has been appointed to the staff as assistant physician in charge of the nurses' health service and has charge of a flat of small wards totalling 20 beds. The flat was designed primarily for the use of sick nurses, but students, both male and female, can be admitted if there is room. The appointment is useful in that it enables the physician to retain the care of students and nurses requiring hospital treatment or investigation, and puts him in closer touch with other members of the hospital staff, on whom he can call as required, than would otherwise be the case.

The retention of the personal care of the student throughout the whole period of his illness constitutes an important element of the service. To hand him over to some other person or to an institution when the need for contact is greatest would surely infringe the principle, so strongly emphasised in social medicine, of dealing with the individual and the group, in health and in sickness, as a whole being and a whole group.

The accommodation in the University buildings consisted at first of two rooms, but this is now being increased to four:

(1) Consulting and examination room.
(2) Treatment room and laboratory.
(3) Office.
(4) Reception and waiting room.

This must be regarded as a minimal requirement.

The day's routine is generally as follows:

I go at 9 A.M. to the Royal Infirmary to see the nurses and do a round of bed cases. I also see what one might call "outpatients." The time taken varies, but is usually between 1 and 1½ hours.

No health examinations are done at this time; they are done by appointment as soon as possible after the arrival of each batch of nurses. These examinations are carried out in the nurses' home where their own teaching is done, and which, consequently, is fairly well equipped for the purpose.

From the Infirmary I go to the University buildings about two miles away, where I first of all see "outpatients," and then pay any necessary outdoor visits to students in their lodgings. I often return to their lodgings in the evenings to deal with the cases more thoroughly, and find that the necessary intimate relationship is better achieved at this than at any other time.

Routine health examinations of university students are also done by appointment. This is rather an important point. Each student is invited to make an appointment. This avoids interference with lectures and gives the student no excuse for not attending.

The health examination is fairly comprehensive, including a history of previous illness, family history, amount and kind of exercise, interests and hobbies, standard of lodgings as regards accommodation, food, suitability for work, price, &c.; a dark-room examination of ear, nose, mouth, throat, and fundus oculi; tests of visual acuity and colour-vision; clinical assessment of nutrition, posture, and development; hæmoglobin examination, radiography of chest, and examination of urine; and a general examination. An electrocardiograph will be utilised when a machine is available. Particular attention is paid to such things as dental caries, infected tonsils, chronic nasal catarrh and sinusitis, errors of

PROFESSOR COHEN: REFERENCES—*continued*

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refraction and muscle balance, postural defects, skin eruptions, hæmorrhoids, varicose veins, defects of locomotion, and moderate degrees of anæmia, conditions which are apt to be neglected or to have their treatment postponed, but which if tackled early can prevent later trouble. Special care is directed to ingrowing toenails, flat-foot, hammer-toes, and other deformities, and to trophic conditions, chilblains, and erythrocyanosis. The nurse inquires particularly regarding menstrual disorders; and, by arrangement with the professor of gynæcology, all such cases are referred to his department for thorough investigation by a woman doctor.

All defects found which require further specialist examination and treatment are referred to the special departments of the Royal Infirmary. The honorary staff are extremely helpful, the specialists concerned affording students reasonable priority and sending useful reports on their cases. Radiography is done at the Royal Infirmary at certain fixed times daily.

Arrangements for dental treatment are not yet comprehensive. Particular cases, such as dental cysts and impacted teeth, are referred to the dental surgeon on the staff of the Royal Infirmary; for ordinary treatment they go to local dental practitioners. Psychological cases are referred to the mental-health department of the Royal Infirmary. Cases of underdevelopment and postural defects are referred to the director of physical training. All findings, together with specialists' reports, are recorded on a punch-system record-card and filed under appropriate headings for easy reference.

PHYSICAL EXERCISE

I have been astonished at the number of students who take no outdoor exercise at all. The percentage of those who do not take enough exercise is very high, about 80% of those examined, and of this group a considerable number appear to have no sort of hobby or interest outside their work as students. This is surely a serious matter. It is not the physician's concern to take part in producing athletic champions, but he should be concerned to see that those who are not able to secure a place in the first and second teams should be able to enjoy periodically a vigorous healthy game or other exercise.

It is generally agreed that young people in this age-group should have plenty of opportunity for letting off steam in exercise of one kind or another. Those who do not like games can seek other forms of recreation, but it should be in the open air. This applies particularly to students whose work is essentially indoors and sedentary, sitting in class-rooms, looking down microscopes, standing round a bed or in the operating-theatre. I feel that many of the student's troubles would disappear if his life were better balanced and he took more physical exercise. No university health service is complete which does not deal with this important aspect of student health. My own contact with the athletic union is not so close as it should be, but I hope to come to some arrangement whereby I can achieve a measure of "direction" towards the playing-fields or the open country for those students who at present lack the opportunity.

ORGANISATION

The University of Aberdeen has been generous about equipment, but the question of supply has been difficult and my rooms are not yet completely equipped. Accommodation and equipment should be adequate if the health service is to attain the high standard consistent with a university service; no physician can put out his best work if he is handicapped in this respect.

As regards the cost of treatment, a student admitted to the Royal Infirmary or attending a special department is dealt with in exactly the same way as other patients. The University has laid down that it "will only accept minor financial responsibility in connexion with the treatment of students." This leaves a good deal to the interpretation, and I have taken it that the University will cover the cost of what I use in the treatment room, but that the student must pay for any drugs and dressings he may require for use in his home or lodgings. There are several funds at the disposal of the University authorities designed to help necessitous students in sickness, but they can be called on only for serious cases and do not cover the sundry small sums required in the ordinary way. Such things as sulphonamides and most of the useful remedies and dressings can make quite a bite into a student's weekly pocket-money, but it is surprising how rarely it is necessary to prescribe drugs; and, as regards dressings, students who are coming to the University every day can easily call in at the treatment room, where the nurse will do their dressings for them. Under the Health Act all sickness costs will be met.

The staff at the University centre consists at present of myself and a nurse-secretary. If the work increases it may be necessary to have a nurse and a secretary. The flat at the Royal Infirmary is in charge of a permanent nursing sister, and the nurses are found and changed in the ordinary way by the Infirmary authorities.

To what extent can this staff and the arrangements which I have outlined meet the need for the yearly routine health examination of all students in the University, in addition to their care in sickness? In other words, are they sufficient for a comprehensive service? The problem is largely mathematical and depends to some extent on the number of students coming for examination.

It takes a minimum of 40 min. to examine a student properly. Allowing for the time necessary to visit the Infirmary in the morning, often again in the evening, and for occasional return visits to see members of the staff, &c., to deal with sick students and visit them in their lodgings, and for sundry distractions incidental to the service, I can examine, on an average, 6 cases a day, or about 30 a week.

There are three full terms of about 9 weeks ..	810
In the Christmas and Easter vacations it would be possible to examine a further 100 students resident locally	100
About 150 medical students come up for vacation terms in their last 2 years of study	150
	1060

This is probably the maximum of examinations which could be carried out by one whole-time physician, and to do this he would require an efficient nurse or an assistant capable of doing some accurate technical work such as examination of urine, Hb estimations, electrocardiography, &c., and a secretary. With any larger number than this there would be no alternative to increasing the staff. The numbers dealt with could, however, be more than doubled if two full-time physicians were employed, since there would not be the same distraction and break in the work. Examinations subsequent to the first do not occupy so much time, and half-hourly appointments could be made. Two physicians, with additional accommodation, could manage 2500 examinations yearly.

In Aberdeen University there are, in the present year, 1822 matriculated students; hence one physician could not carry out the work of a full medical service on the basis of a yearly examination of all students. Should examinations be limited to first-year and third-year students in all faculties, and fifth-year and final-year medical students, the number to be examined next year would be about 1050. I consider that one physician could do this and look after sick students also, but the numbers in the third and subsequent years are likely to increase after next year.

At present health examinations are compulsory only for medical students, who have to be examined three times during their course, and voluntary for all others.

The number of non-medical students likely to volunteer cannot yet be estimated, since in this broken year I have only been able to approach those in their first year; of these 28% requested examination and were examined. Taking 30% as a likely response for all non-medical students, the number of examinations, on a yearly basis, would be about 1050 on this year's figures, with, in addition, 75–100 nurses.

The examination of the nurses can be carried out more quickly than that of the students, because the examinations are done in the nurses' home, where they are paraded and prepared—i.e., they are brought in one after another in dressing-gowns. The sister tutors also are able to help considerably with measurements of height and weight, examination of urine, &c.

There is a striking difference between the university student and the student nurse. The nurse is more carefree and less worried. She is governed completely from the time she enters hospital, her day's work and her hours of recreation are planned, her quarters and meals provided, she wears a particular kind of clothing, and she subjugates herself entirely to hospital discipline. She has little privacy, even in illness; she reports sick through the matron, is conducted to the doctor by a sister, and full information of her condition goes back to matron and to her family. Her studies are carefully supervised. She receives a wage sufficient for her immediate needs. In fact, her behaviour generally is ordered and she has relatively little to worry about.

The university student is much more intense, more inclined to introspection and worry. His course of study is planned, but it is a much more exacting affair than the nurse's. He is very much more on his own (indeed I have found that the student can be a very lonely person) and has nothing provided in the way the nurse has. He receives no salary and is often hard put to it to make ends meet.

Because of the difference between these groups I am a little doubtful at the moment of the value of incorporating the caré of student nurses in a university student-health service, but must reserve opinion pending further experience, or pending a change in the training of nurses.

COMMENTS

The preventive value of the service is beyond question. It is obviously of the first importance that students of all faculties should be able to continue their studies unbroken by sickness. It is also very important that, if sick, they should be made sufficiently well to sit examinations at the proper time. One fascinating element of the work lies in the frequent efforts to effect a cure against time. Life at a university ought to be, and I think usually is, for the student a happy and healthy time. On the other hand, the conditions which students make for themselves can be very depressing both mentally and physically. The fog-banks ahead in the form of examinations, the feeling that one is not keeping pace with the teaching, the abandonment of physical exercise to devote more time to work, the effort to put in more hours of reading continuing into the "wee sma' hours," the subsequent heaviness on waking and the scramble to get to the first lectures in time, the consequent irregularity of bowel movement, bad landladies, uncomfortable "digs," poor food, and often financial stringency, all these and other factors are common in a student's life and do not make for fitness.

Clear sound advice, especially insistence on the need for engaging in sport or taking exercise in some suitable form, and its value as a means of mental relaxation, on the value of the weekend and of the vacation, the correction of headaches and eye strain and of other small but important defects, the assurance that certain sexual disturbances are of small significance, and in many cases just letting the student unburden himself—all these can do a great deal to assist him to come fresh to his final examinations and fit to face whatever the world has in store for him thereafter.

My main criticism of the service is that it will be incomplete until health examination is made compulsory not only for medical students but also for students of all faculties. Though to many people the idea of compulsion is distasteful, I am strongly in favour of making a complete medical examination compulsory for all students. In this free country compulsion enters so largely into our lives that I cannot believe there would be any difficulty about it: nor is there any evidence that students themselves would resent it. So far as medical students are concerned, they all come along in a cheerful frame of mind, and I have not met one who showed resentment at having to be examined. The reason why more students do not present themselves voluntarily is that they "cannot be bothered"—the common evasion of these often casual young people.

Another reason which tends to make the service incomplete, and one which must affect the statistical analysis, is that in Aberdeen (and I suppose the same applies to most universities other than Oxford and Cambridge) many students live with their parents in the town and, when ill, consult their own family doctor. In fact the terms of employment of the physician are that he will attend "those students whose homes are not in Aberdeen" and are living in lodgings. Some students, however, who have family doctors in Aberdeen consult the University service for treatment. I take the opportunity of examining all who come, from whatever source, very thoroughly. Minor ailments are dealt with on the spot; with regard to anything more serious, I make a point of getting in touch with the practitioners concerned, some of whom ask me to deal with the case; others treat the student and keep me informed, but in a few cases I lose touch completely. As an example, a case of early pulmonary tuberculosis detected on routine examination was referred to his own doctor, who elected to deal with him, and I have not been able to get an accurate report on his progress. On the whole, however, the practitioners in Aberdeen are friendly and coöperative, and some of them who are consulted direct refer cases to me or tell me about them. The situation constitutes a potential source of leakage, and I see no way to overcome it other than by seeking to maintain friendly relations with all concerned. The University chaplain and the supervisor of women students sometimes hear of sick students when I do not, and are helpful in putting me in touch with cases.

Though a student-health service has been in operation in Aberdeen for some time, the present full-time service is in its infancy, and experience so far may not be a complete guide. The fact that the service has not been well known to students, difficulties in obtaining equipment, and other things have affected the work, and the experience of at least another full academic year will probably be required before one can speak in exact terms of what can be done.

CONCLUSIONS

The student-health service should, so far as possible, be complete.

The provision of medical care—i.e., involving the full doctor-patient relationship—affords the best means of getting complete and accurate records of the social and environmental background and of individual histories.

There should be a sanatorium or special accommodation in hospital for students, and it is desirable that the physician in charge of the service should have charge of this.

A full-time physician in charge of a full service can carry out 1000 examinations per year.

The examination should be compulsory for students of all faculties.

COMPULSORY PHYSICAL EDUCATION FOR UNIVERSITY STUDENTS

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IF its more specified purposes are set aside, university education may be considered as the ordered pursuit of advanced knowledge and techniques, with a bias towards contemporary social purpose. The subject of this paper is simply the physical aspect of this pursuit so far as it affects the undergraduate.

It will help first to consider briefly the whole field of physical education and compare it with the parallel stages of an intellectual discipline. Thus, the primary stage may be said to correspond with the acquisition of the techniques of reading, writing, and arithmetic. The child learns elementary bodily coördination in an environment governed by simple natural laws. Running, jumping, throwing, and climbing are the primitive skills at this stage, but one may add catching, floating in water, or bouncing, to illustrate the gradually increasing perplexity of the natural forces involved.

The secondary stage, which follows the acquisition of "physical literacy," is the stage of "tools and conventions." Just as, intellectually, the child uses the tools of mathematics and language to broaden its skill and assimilate previous human experience in relation to present needs, so physically he starts to use the tools which relate him to more complex natural forces, and to learn the conventions of contemporary games. For instance, he may use a bat, a swing, skates, skis, a springboard, or a sail to play off one physical force against another to serve his purpose, much as the budding craftsman learns how the momentum of a mallet and the cutting end of a chisel combine to produce the configuration of wood which he requires. And he must also learn the rules of games whereby he relates his skill to that of others, coöperating with or outwitting his fellows in turn.

By the time the university stage is reached, the student should have acquired both elementary skill and experience. The next stage is to be regarded as one of differentiation rather than growth. The student should know his or her capabilities and be able to specialise to some extent in those pursuits to which he or she is temperamentally or physically best suited. But at the same time a new characteristic tends to emerge—that of social maturity. Thus, while skill may be specialised, character is broadened. Instead of playing football when football is laid on for him, he plays, if he is keen, as a member of a club, and the running and fortunes of the club become partly his concern. The physical skill is thus related to social function. Courts must be booked, expeditions organised, the hard work of maintaining equipment and taking turns in the use of it bring valuable qualities to the fore in addition to the much vaunted team spirit. Moreover, purely social contacts mature from these associations and are complementary to those fostered simultaneously by kindred intellectual pursuits or communal living conditions. In the desire to arouse the interest of others and encourage their skill is discovered the germ of the teaching attitude.

This brief analysis, the divisions within which are very arbitrary, shows the lines on which an ideal university physical-education department might work. It should provide for the integration of physical activity with personality and society on as broad a basis as possible, without detriment to an ordered freedom consonant with the university attitude. It makes three basic demands: freshmen with elementary skill and secondary experience; ample and varied equipment; and "academic" standards of teaching and opportunity.

DEFECTS OF VOLUNTARY SYSTEM

At this point we come to the three major difficulties inherent in this utopian project, for in practice we find many freshmen with no experience and some even with no elementary skill. We find also equipment that is ample in only a few narrow fields and entirely lacking in others; while the teaching, where there is any, can seldom by any stretch of the imagination be considered as of academic standard.

These three difficulties relate ultimately to one another; the poor quality of teaching with few facilities in the schools allows the physical illiterates to reach the university, which in turn has no standards of its own. That this vicious circle is overlooked must be attributed in large measure to the voluntary system which fosters the emergence of the ready-skilled few and stifles the moderate potential of the many.

This voluntary system is voluntary only in name, for the student is—at least in some older universities—virtually compelled to contribute a considerable subscription to the sports funds, which are all spent on the pursuits of rowing, cricket, and football. If by inclination or time-table these are not feasible in his case, he is destined to fend for himself in the open market of an overcrowded and ill-provided town. Let us accept that this is a bad old tradition. But the tradition of the younger universities is no better, for here the idea seems to have been that anything the student did, or did not do, out of academic hours was no concern of the university. These various traditions at present combine in depriving something approaching 90% of all university students of adequate physical opportunity.

WIDER CHOICE WITH COMPULSION

If we are to overcome inertia in this matter and catch up with the times, a complete change of attitude will be necessary. Education for the body as well as the mind must become a concern of the universities, and my own view, supported by experience, favours the introduction of compulsory physical activities for all first-year students. I have changed my mind in this matter in the last two years, and I hope to persuade those who disagree to change theirs, for I have seen what has already been accomplished by this means by my colleague A. D. Munrow, director of physical education at Birmingham University, to whom I owe many of the views here advocated. It is his experience that the compulsion falls far more heavily on the university authorities than on the student. He has, for instance, had to be provided with increased facilities, a threefold increase in his original staff, and adequate time from the curriculum hours for physical activity. He is, I need hardly say, possessed of considerable vision and powers of inspiration, and has collected first-rate assistants, but he found that the old system gave him no opportunity to realise his ideas. The choice provided is large and the system is popular; it interferes in no way with the usual games and sports run by student organisations whose regular players can contract out of the compulsory periods if they wish.

The alternatives include camping, rock-climbing, folk-dancing, and gymnastics; and, during the past hard winter, skis were obtained from Government surplus stores, and cross-country expeditions were organised. The social value of physical education, thus broadly conceived, is one of its major assets.

The native resentment to compulsion is, after all, something of a bogy. We compel students to attend their courses, once chosen; and we often compel residence in halls or colleges, and conformity with a host of regulations for the sake of equable community living. Why should we not also compel a health-promoting régime for the same reason? If compulsion is so bad for the body, is it not worse for the mind?

Compulsory physical education is not likely to be adopted immediately by all universities; it is in an experimental stage and merely represents one view of future developments. For one thing, there is at present no adequate staff available of the required quality. Physical education has suffered badly from dogmatism; rigid systems have been built up on unproved hypotheses, and often applied in unsuitable conditions. Much of my time is given to contradicting the false theory that permeates the textbooks. The products of physical-training colleges are too often narrow-minded; and though some of these colleges have doubtless done valuable pioneering work, they seem to cling to systems of drill and gymnastics, founded on mythical principles, with unswerving tenacity. We need a much more liberal and scientific attitude in this matter.

It is to be hoped that other British universities will accept physical education as a subject worthy of a place beside purely intellectual subjects in a general degree course, and thereby encourage some of those gifted young men and women who combine physical and intellectual skill to take up a career that provides a field for both. For, surely, physical education is both a means and an end in itself, like any other branch of education; its merits, alike for the individual and society, must equally be taken for granted and not tied to any particular physiological hypothesis. The objective of both bodily and mental training is the better education of the "whole man." Of two equally erudite professors, the one who plays squash or can dance a foursome reel is the better product.

Let us therefore see that our universities set about providing for a much wider range of physical skills: not only field and court games but all-the-year-round swimming and diving; dance, both traditional and contemporary; not only athletics and gymnastics but also skating, ski-ing, gliding, and sailing; not only S.T.C. camps but expeditions for adventure, mountaineering, and canoeing. These are all worth-while activities whose virtues are not in question among those who pursue them or those who have given time and thought to their encouragement. Can we doctors honestly say that we know any better?

HEALTH EXAMINATIONS OF STUDENTS

PILOT SURVEY IN OXFORD

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THE purpose of this communication is to relate experience of a pilot survey of student health carried out during the first two terms in 1947 at Oxford, and to examine in the light of this experience what degree of success student-health examinations may expect, and what the limitations of this method are in practice.

The scheme which operates at Magdalen and Somerville is designed to provide health examinations and a health advisory service for the undergraduates of these colleges and to carry out a long-term study of their health. The physician in charge does not undertake treatment, except in so far as explanation and reassurance may be necessary. The specialist services at Oxford have been of great help from the beginning. Good ancillary services are available at most universities, but it should be emphasised that for each student in need of treatment in term time at least an equal number have minor anxieties or need advice on general lines. There are consequently many opportunities of usefulness to be found by a medical adviser who is independent in the student's mind of parental, tutorial, or disciplinary relationship and can be consulted at any time without additional cost.

During Hilary and Trinity terms this year 155 students were examined on a voluntary basis, 77 from Magdalen and 78 from Somerville. This represents 60% of first-year men and 66% of first-year women to whom the invitation to join was sent. Rather more were seen in Hilary than Trinity term, when pleasanter outside diversions abound, and the response among first-year students was rather higher than among those in their second year.

The ideal time for the first approach appears to be just before arrival in the first year, before the students are bombarded with political and other circulars. Though this early approach was made impossible by starting in January, the response may be regarded as encouraging; unfortunately it is insufficient to yield a representative survey of the two colleges, and it is doubtful whether this is possible on a voluntary basis.

Experience elsewhere has led to the recommendation of compulsory medical examination. Medical examination should not constitute an extra condition of entry to university life; nor should it ever appear to influence a student's progress at the university adversely. On the contrary, it offers benefits, such as the early recognition of serious and remediable illness and the correction of minor defects which can interfere with work and enjoyment. A fair number of undergraduates have volunteered the view that health examination should be compulsory, and if the opposition to this is greater in senior than in junior common-rooms it is believed to arise in part from a fear of making neurotic students. Experience in the fighting services does not confirm this conjecture, and the work of the M.O. in support of morale is well recognised. It is no part of the design of the scheme to pander to moral weakness, or to recommend as a rule deep delving of a psycho-analytical type, except in the rare instances in which such specialist help may prove necessary. Far more often opportunity is found to relieve anxiety at an early stage.

Another fear is that further filching of the personal liberties of the individual may be attempted, an ugly enough symptom which is thought to be extending today. Health examination at the university is surely no more of an infringement of this liberty than are the recognised services of the school doctor, of whose work it is a logical extension, and it is even less of an infringement than in the case of the medical services of the fighting forces, where medical examination at entry may prove a dispiriting bar to opportunity.

Further, in the student-health scheme no outside loyalty need exist which might influence the relationship between student and doctor. When fully established in university life it seems more probable that the doctor may find that he has to resist pressure by college or university administration to open the medical back-door in the case of students failing to profit or for other reasons undesirable.

The great advantages of compulsion are (1) the assurance that so far as possible all handicaps are discovered and dealt with; and (2) the information which becomes available concerning the health and sickness experience of students would be representative. For study purposes and for the planning of health apparatus in general a fair sample then replaces one in which other non-random methods of selection have occurred.

FINDINGS OF PILOT SURVEY

For those still in doubt of the need for student-health supervision, perhaps the findings in this pilot survey at Oxford may provide convincing evidence. They record many minor and remediable disabilities and not a few serious illnesses among 155 students, in spite of the belief that as a group they should represent one of the healthiest sections of the community. Altogether of 155 students, 23 (15%) were deemed to need treatment

before the end of term; in another 61 (39%) it could be postponed till the vacation.

Among the more important abnormalities discovered by the survey of 155 students were:

(1) One case of open pulmonary tuberculosis, and another with pleural effusion and tuberculous foci. Notification of the first led to discovery of a younger brother with active infection. From a public-health point of view isolation of infective cases is clearly desirable, and yet at present a medical officer of health may have knowledge of such cases in a university population but lack the liberty to inform college authorities.

(2) Systolic murmur because of which activities had been limited ten years previously. Reassurance led to full restoration.

(3) Attacks of abdominal pain requiring investigation. Follow-up examination of amœbic dysentery and sprue.

(4) Iron-deficiency anæmia (two cases, Hb 55%, Hb 76%).

(5) Polyarthritis secondary to nasal polypi and sinus infection. Osteochondritis of lumbar spine with symptoms. Internal derangement of the knee. Recurrent dislocation of the shoulder.

(6) Transient inferior rectus palsy, with diplopia.

(7) Twenty cases of minor anxiety open to relief by explanation and reassurance.

The accompanying table of classified findings indicates which abnormalities are most common. Dental care on the whole was good, but the number of students recognised to be in need of dental treatment might well have been higher had probe and minor examinations been carried out by a dental surgeon. About three-quarters of those with errors of refraction had already been diagnosed, but annual re-examination may bring to light some progress in these defects. A family history of migraine, asthma, or eczema was present in 28%.

AIMS OF STUDENT-HEALTH EXAMINATION

Apart from assessments which lead to the removal of physical handicaps, the aims of the health examination must be concerned in some degree with the assessment of personality and those social conditions which control a student's life. If suitable records are devised, especially if certain evidence relating to background and upbringing is included, it will become possible in time to determine the influence of factors such as social origin, family history, previous illness and constitutional tendency, "only childism" (more than 1 in 5 of recent entries at Oxford have been only children), economic status, type of schooling, nature of lodging, opportunity for physical exercise and hours spent in daily travel, and to plot the bearing of such factors on health and successful use of university opportunity. Such records should also provide evidence from which advice on community problems of diet, lodgings, work, and recreation may be given, and furnish indications about the most profitable aspects of physical or mental hygiene to treat in lectures. There is, however, one important aspect in the making of such records which should not be neglected. It is desirable to shape, with the assistance of the statistician and expert records officer, a form which might become general in all universities, providing certain basic information of a factual kind in a manner readily susceptible of analysis. The use of such a card in no way precludes ad-hoc investigations of local choice. It would allow of valuable comparisons between universities and furnish material for the establishment of useful standards.

CLASSIFIED FINDINGS IN 155 STUDENTS

Condition	No. of male students	No. of female students	Total
Eye:			
Myopia	27	24	51 (33%)
Astigmatism	10	10	20 (13%)
Hypermetropia	3	5	8 (5%)
Strabismus	3	3	6 (4%)
Other eye conditions	2	4	6 (4%)
No. of students	43	42	..
Skin	25	24	49 (32%)
Spinal (scoliosis, kyphosis, lordosis)	21	22	43 (28%)
Surgical	22	14	36 (23%)
Ear, nose, and throat	14	9	23 (15%)
Gastro-intestinal	10	9	19 (12%)
Minor anxieties	9	11	20 (13%)
Systolic murmur	6	6	12 (8%)
Condition requiring general advice	2	6	8 (5%)
Sundry other medical conditions	18	20	38 (24%)
Dysmenorrhœa:			
Mild	..	16	16 (21%)
Moderate	..	6	6 (8%)
Chilblains	5	9	14 (9%)
Dental condition requiring treatment	6	7	13 (9%)
No. of abnormalities	183	205	388
No. of students	77	78	155
Average number of abnormalities per student	2·4	2·6	2·5

LIMITATIONS OF THE METHOD OF ROUTINE HEALTH EXAMINATION

Time is the most important factor. One hour was devoted to the interview and examination, including hæmoglobin estimation; of this it is as well to keep 10 minutes at the end for discussion of the findings and those important last-minute questions which a patient asks when his confidence is fully established. Chest radiograms are taken for convenience on a separate occasion. If taken beforehand and reported as normal they serve as a useful method of opening the interview. A maximum of 20 patients a week can be seen as a regular procedure, and the number of 1-hour examinations in a year is limited to a maximum of 450 where there are three 8-week terms. This means that if 1 hour were to be devoted to each annual re-examination, and the average stay at the university is 3 years, the annual entry which could be handled by one physician would be about 150. Where university terms are longer than 8 weeks, up to 250 might be a reasonable annual quota.

Now, if it is desired that the doctor supervise more than this number, a point will be reached at which this type of health examination, which is more suitable for research purposes, should go by the board and be replaced by another less time-consuming. One suggestion is that the more important headings could be extracted and embodied in a shortened form suitable for a half-hour interview. It is reasonable to suggest that most of the more important abnormalities would have been detected at a half-hour interview, provided that concentration was kept on their discovery. A number of headings such as addresses, schools, and experience in the Forces may be completed by a secretary-receptionist. Much time is saved if the student is provided with headings of previous history to complete at leisure beforehand, and this too often serves to crystallise in his mind some problem on which he wants advice.

What criticism may be offered of this briefer type of interview? It would hurry the proceedings and make the discovery of an abnormality prejudice the time-table. Thus it would not permit to the same degree the patient, accurate, and complete recording of data without which analysis and correlation would be valueless, though there should be no difficulty in recording such essential measurements as height and weight. With regard to the number of patients who could be seen, it certainly would not double this, though it would allow some

increase. Despite these criticisms, if the half-hour consultation leads to the removal of the defects which can be remedied it will have served its main purpose.

If it is impossible to devote half an hour to each student, it might be better to limit the health service to routine chest radiography and facilities for consultation for those who complain or have some special problem they wish to discuss.

An alternative method for dealing with large numbers might be the setting up of a university medical board with an ophthalmologist and aural and dental surgeons in attendance. This immediately raises problems of expense, accommodation, and administration, together with the risk of some loss in the personal relationship between physician and student. Medical work in these circumstances for a long period is also apt to lose its hold over the doctor's interest.

As a last note, it should be emphasised that the life blood of routine health examination, especially when practised as a whole-time job, flows only so long as the channels of interest in the individual are open; should these be choked by an undue burden of routine, the value of health examinations must quickly decline. Where, on the other hand, time is available for interest to develop in the individual student, it grows greatly and the work as a whole seems more than worth while.

My thanks are due to Sir Henry Tizard, late president of Magdalen College, and to Dr. Janet Vaughan, principal of Somerville College, who helped to make this pilot survey possible. I am particularly grateful to Prof. J. A. Ryle for the benefit of his direction and criticism.

FAMILIAL IDIOPATHIC METHÆMOGLOBINÆMIA

FIVE CASES IN ONE FAMILY

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VERY few instances of idiopathic methæmoglobinæmia occurring as a familial disease have so far been reported. Deeny et al. (1943) described the condition in two brothers and found that the disease could be successfully treated with large doses of ascorbic acid, as had been found independently by Lian et al. (1939). Barcroft et al. (1945) made a detailed study of Deeny's cases during treatment and reviewed the literature of the disease up to 1940. Since then there have been reports of isolated cases treated successfully with ascorbic acid (King et al. 1944) and with methylene-blue and ascorbic acid (Sievers and Ryon 1945).

The cases reported here come from a family of nine brothers and sisters, five of whom are affected, a number larger than has been definitely authenticated in any family previously described. The effects of treatment are recorded, together with the results of biochemical investigations which throw light on the underlying metabolic abnormality responsible for the condition. The observations on this family may also provide material for genetic studies.

The family is set out in fig. 1. No. 6 came under observation first when he attended the outpatient department of a general hospital for a minor injury. He was referred to us because of his cyanosis, and we found that his blood contained a considerable amount of methæmoglobin. He was treated with ascorbic acid 300 mg. daily. The changes in his blood-methæmoglobin level during treatment are shown in fig. 2. He did not appear to be greatly concerned about his unusual colour and did not continue treatment. When we saw him four years later he had relapsed completely, having taken no ascorbic acid for at least eight months. We could not secure any satisfactory family history from him and at the time regarded him as an isolated case.

In 1946 his identical twin brother, no. 7, attended hospital for an injury to his hand and was similarly referred to us because of his cyanosis. We found methæmoglobin in his blood, and he told us that several other members of his family were abnormal in colour. They were so little concerned about their appearance that we could not persuade them to come to hospital for investigation and treatment.

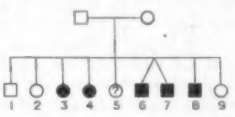

Fig. 1 — Familial idiopathic methæmoglobinæmia: affected males shown by black squares; affected females by black circles; nos. of members of the family correspond to those in the table.

We were anxious, in view of the rarity of the disease, to obtain all the information we could about the whole family. We therefore decided to visit them. They lived on a small farm in a remote and mountainous part of Ireland; and, since it is necessary in measuring methæmoglobin to carry out the determinations as soon as possible after taking the blood samples, we set out in a car fitted up as a mobile laboratory. The equipment included a Spekker photo-electric absorptiometer and a Beck-Hartridge reversion spectroscope, both modified to work from the car accumulator. The family were most coöperative, and we obtained blood samples from all the living members of the family except one whom we could not reach.

ANALYSIS OF BLOOD PIGMENTS

Venous samples were taken from the arm and put into tubes containing potassium and ammonium oxalate mixture. They were kept ice-cold until analysed for methæmoglobin about two hours later. The blood samples were examined in the reversion spectroscope. Those from the cyanosed members of the family all showed an absorption band in the red, the mid-point of the band being at 633–634 mμ indicating the presence of methæmoglobin. The band was clearly visible in a dilution of 1 in 40 when viewed in a thickness of 2 cm.

Methæmoglobin was determined photo-electrically by a method based on that of Evelyn and Malloy (1938), which depends on the increase in transmission of red light when methæmoglobin is removed by addition of cyanide. Blood 0·6 ml. is added to 16 ml. of distilled water; and, after it has stood for 10 min., 8 ml. of *M*/10 phosphate buffer (pH 6·9) is added. It is preferable to centrifuge the mixture strongly for 20 min. at this stage. We have found it a great advantage, when measuring small amounts of methæmoglobin, to use a differential method of reading in the absorptiometer. The solution is put into two similar 1-cm. glass cells, which are read one against the other. The cyanide is then added to one and the reading repeated. From the change in absorption, the methæmoglobin is found from a calibration curve prepared in the same way from blood containing various known amounts of methæmoglobin.

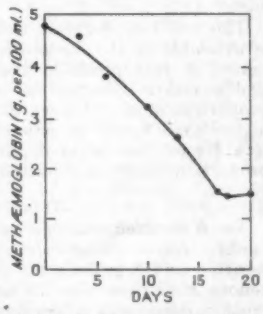

Fig. 2 — Changes in blood-methæmoglobin level in no. 6 during treatment with ascorbic acid 300 mg. a day.

Total blood pigments were determined by the alkaline-hæmatin method using the artificial standard of Gibson and Harrison (1945).

The accompanying table shows the blood-methæmoglobin levels of all members of the family except no. 1, who was away from home but was stated independently by three members of his family to be normal and never

to have been blue. His present employer confirmed that he is free from any signs of cyanosis.

The mother had died some years previously, aged 48, but was stated never to have been cyanosed. We also visited her brother, who showed no cyanosis. One of her daughters stated that her mother had been very fat and had died of a "liver complaint," having been jaundiced for seven months before her death; there was no evidence to suggest that her blood had ever contained any abnormal amount of methæmoglobin.

The father's blood was also perfectly normal, as was that of three of his children, the finding of 0·1 g. of methæmoglobin per 100 ml. in the blood of no. 9 being within normal limits (Gibson and Harrison 1945).

The remaining five brothers and sisters all showed methæmoglobin in their blood in abnormal amounts in accord with their abnormal appearance. None of them seemed to suffer any appreciable physical disability from the presence of the abnormal pigment, but they all said they "felt better" as a result of treatment.

As regards age of onset of the cyanosis, no satisfactory history was obtained from any of the people affected, who seemed very uncertain about how long they had been blue. The general consensus of opinion suggested that the cyanosis had first appeared in adolescence. None of them is married. It was stated that no other relations of the family had ever shown any cyanosis.

The father said that both his own and his wife's family had lived in the village for generations, and that he was related to his wife—"fourth cousins or something of the sort."

FINDINGS IN FAMILY AFFECTED BY IDIOPATHIC METHÆMOGLOBINÆMIA

No.	Age (years)	Colour of skin	Initial met-Hb (g./100 ml.)	Total pigments (g./100 ml.)	Met-Hb as % of total pigments	Met-Hb after treatment (g./100 ml.)
Father	67	Normal	0·0	14·6	0	..
1	32	..	..	..	..	..
2	31	"	0·0	15·6	0	..
3	28	Lavender	3·1	15·3	20	0·1
4	27	Grey-blue	1·9	15·9	12	0·3
5*	..	..	..	..	..	..
6	22	Slaty-blue	4·8	18·7	26	1·3
7	22	"	5·1	18·8	27	0·5
8	21	Grey-blue	1·9	17·4	11	0·1
9	18	Normal	0·1	12·7	1	..

* Died of pertussis at 7 months.

This evidence, together with such other information as is available in the literature (see Barcroft et al. 1945), makes it very probable that this form of methæmoglobinæmia is inherited as a recessive character. The proportion of sibs affected in the present family is much higher than would be predicted on average for a recessive factor, but wide departures from the theoretical proportion would be expected in individual families.

TREATMENT

No. 6 received ascorbic acid only, 300 mg. a day by mouth, with the result shown in fig. 2. No. 7 received ascorbic acid 1 g. daily for two days followed by intravenous methylene-blue 75 mg. This was followed by rapid improvement, a blood sample taken 1½ hours later showing only 0·5 g. of methæmoglobin per 100 ml. Nos. 3, 4, and 8 received ascorbic acid 1 g. and methylene-blue 300 mg. by mouth in capsules. (The samples for the final blood analysis of nos. 3, 4, and 8 given in the table were taken 24 hours after the administration of the methylene-blue.) The ascorbic-acid intake was maintained at 1 g. a day for four days, and then reduced to 300 mg. a day. Methylene-blue by mouth appeared to be as effective as giving the dye by injection, and cleared the blood of methæmoglobin within a few hours. The rapid change to normal of the skin colour was very striking.

SHIFT IN OXYGEN-DISSOCIATION CURVE

Hitzenberger (1932) found that in familial idiopathic methæmoglobinæmia the oxygen-dissociation curve of the blood was shifted to the left—i.e., the blood gave up oxygen less readily than is normal at a given oxygen pressure. Darling and Roughton (1942) have shown that this shift occurs in hæmoglobin solutions containing methæmoglobin produced artificially both in vivo and in vitro. (We are grateful to Prof. H. Barcroft for calling our attention to these papers.) Darling and Roughton interpret the shift as being due to the presence, in a hæmoglobin-methæmoglobin mixture, of molecules containing both ferrous and ferric atoms in various atomic proportions.

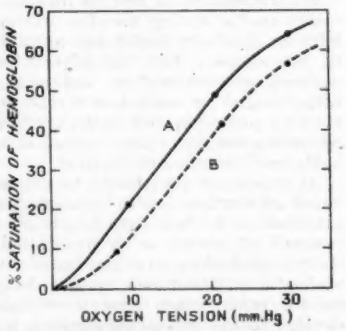

Fig. 3—Oxygen-dissociation curve of blood of no. 7: A, with blood containing 4·2 g. of methæmoglobin per 100 ml.; B, with blood after removal of methæmoglobin by methylene-blue.

We determined the oxygen-dissociation curve in the blood of no. 7 by equilibrating the blood at 37°C with suitable mixtures of oxygen and nitrogen containing carbon dioxide at a pressure of 40 mm. Hg. Samples of the blood and of the gas mixtures were then withdrawn and analysed respectively in the Van Slyke-Neill apparatus and Haldane apparatus.

The shift in the dissociation curve was demonstrated in two ways:

(1) The dissociation curve of no. 7 was determined on the blood in the presence and absence of methæmoglobin. For this purpose a large sample of his blood was defibrinated by stirring with glass-wool and divided into two portions.

The methæmoglobin was removed from one portion by incubating at 37°C for an hour in the presence of 0·01 *M* glucose and 0·00005 *M* methylene-blue. (Control experiments showed that methylene-blue does not influence the dissociation curve of normal blood.) The same volume of glucose was added to the other portion but no methylene-blue.

The dissociation curves of both portions were then determined, with the results shown in fig. 3: the removal of the methæmoglobin produced a shift to the right in the position of the curve.

(2) The dissociation curve of the blood from no. 7 was compared directly with the oxygen-dissociation curve of a sample of normal blood. The results confirmed those obtained by removing methæmoglobin with methylene-blue, the curve for blood containing methæmoglobin being shifted to the left as compared with that of normal blood.

The shift in the dissociation curve and its change in shape from the S-shape characteristic of normal blood towards a hyperbolic form is of importance, since it would tend to make oxygen less readily available to the tissues. Thus, as Darling and Roughton (1942) point out, the substitution of the normal pigment by methæmoglobin would be expected to produce more severe effects than would a simple loss of the same amount of hæmoglobin.

DISCUSSION

The shift in the dissociation curve has a possible bearing on the interpretation of the mode of production of the abnormal pigments. One mechanism which might be postulated is that there is a defect in the bone-marrow leading to a production, by a part of it, of corpuscles containing only methæmoglobin, and that the proportion of abnormal bone-marrow determines the amount

of methæmoglobin in the blood. There would then be two kinds of corpuscles in the circulation, one containing normal (ferrous) hæmoglobin molecules, and one containing 100% methæmoglobin (ferric). In these circumstances there would be no opportunity for the two types of pigment to interact, and the oxygen-dissociation curve would be expected to be normal in position. In fact, however, as shown in fig. 3, the curve is shifted away from normal to the left. This hypothesis of the production of two types of corpuscle is thus evidently wrong. It seems much more likely that in idiopathic methæmoglobinæmia the abnormal pigment is distributed evenly throughout the red cells of the body rather than segregated in individual cells. According to the theory of Darling and Roughton (1942), there will then be an exchange of electrons between ferrous and ferric atoms, leading to pigment molecules each containing both ferrous and ferric atoms. Such molecules, they believe, have a stronger affinity for oxygen than has ordinary ferrous hæmoglobin. The shift in the curve in our experiments would thus be explained.

We believe that the abnormal amount of methæmoglobin is not due to any bone-marrow defect but to a disturbance in the equilibrium hæmoglobin $\rightleftarrows$ methæmoglobin (including any intermediate compounds) which in normal blood is very far to the left. Work shortly to be published (Gibson) has led to the conclusion that the reduction of methæmoglobin in normal persons depends on the triose phosphoric and lactic enzymes of the erythrocytes. These enzymes function with cozymase and coenzyme factor I in bringing about methæmoglobin reduction. Examination of the erythrocytes taken from cases of idiopathic methæmoglobinæmia has shown that they are deficient in coenzyme factor I. The accumulation of large amounts of methæmoglobin in the blood is thought to be due to the inability of the enzyme systems to reduce it to hæmoglobin. As it is probable (Peters and Van Slyke 1931) that methæmoglobin is constantly being formed in the blood of normal persons, we may suppose that the equilibrium level of methæmoglobin will depend on the efficiency of the enzymes which remove it. When these enzyme systems are deficient, large amounts of methæmoglobin will be present in the blood.

The rapid removal of methæmoglobin from the blood after the administration of methylene-blue is probably due to the catalytic action of the dye, which causes methæmoglobin to be reduced by enzymes which are otherwise unable to bring about this reaction (Gibson unpublished). The action of ascorbic acid in altering the blood-methæmoglobin level seems to be due to a direct reaction between methæmoglobin and ascorbic acid (Gibson 1943). The reaction is comparatively slow. Even with the greatest concentration of ascorbic acid which it is possible to attain in the blood, the displacement of the equilibrium methæmoglobin $\rightleftarrows$ hæmoglobin in favour of hæmoglobin is not sufficiently great to lead to the complete disappearance of methæmoglobin from the blood. It has been found in practice that these cases of methæmoglobinæmia when treated with ascorbic acid tend to settle down at a level of about 1 g. of methæmoglobin per 100 ml. As indicated by the work of Sievers and Ryon (1945), this equilibrium value of blood methæmoglobin is similarly approached from the other side with ascorbic acid treatment after methylene-blue has been given.

As regards the treatment to be recommended, it has been shown by several workers (see Barcroft et al. 1945, King et al. 1944, Sievers and Ryon 1945) that the blood methæmoglobin of these patients can be kept at this low level with daily doses of ascorbic acid of about 0·3–0·4 g., and that under these conditions hardly any cyanosis can be detected. On the other hand, the action of a single dose of methylene-blue, even when taken by mouth, is much more rapid and complete, as shown in the table, but its action is only transitory. It seems preferable to recommend continuous treatment with ascorbic acid, a natural food constituent, rather than with methylene-blue, which might possibly have an unsuspected toxic action after prolonged dosage. We feel, however, that it may be desirable to supplement the action of ascorbic acid with an occasional dose of 0·3 g. of methylene-blue by mouth, particularly if, as the result of temporary failure to keep up the intake of ascorbic acid, the cyanosis shows signs of returning.

SUMMARY

Five cases of familial idiopathic methæmoglobinæmia in one family of nine brothers and sisters are described.

Treatment with methylene-blue and ascorbic acid by mouth was successful.

The oxygen-dissociation curve of blood from one of these patients showed a shift to the left.

The ætiology of the disease and the significance of the findings are discussed.

We wish to thank Dr. P. J. Courtney, whose coöperation did much to make the investigation possible, and Dr. S. I. Turkington, who generously placed the facilities of his ward at our disposal.

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RH FACTOR AND HÆMOLYTIC DISEASE OF THE NEWBORN IN JERUSALEM JEWS

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EVER since the discovery of the rôle played by the Rh factor in the pathogenesis of erythroblastosis fœtalis (Levine and Katzin 1940) it has been apparent that a correlation exists between the frequency of hæmolytic disease of the newborn and the distribution of the Rh antigen in the population. The incidence of Rh-negative persons is about 15% in the white races as compared with 0·6–4·5% in the coloured races (table I). There seems to be little doubt that in races with a small ratio of Rh-negative persons, such as Indians (Ranganathan et al. 1946) and Chinese (Levine and Wong 1943), erythroblastosis fœtalis is rare or altogether absent.

Little has been published on the incidence of the Rh factor in Jews, though Lubinski et al. (1945) found 8·57% of Rh-negative persons in Jewish women in Canada. In a previous study Gurevitch (1945) reported an incidence of 15% Rh-negative in a group of 400 blood examinations in Jewish persons in Palestine. It must be emphasised that his material was carefully selected, comprising cases of hæmolytic disease of the newborn and related conditions from the whole of Palestine. In fact, out of this limited material, 15 cases of Rh incompatibility, with anti-Rh antibodies in 8 of them, were found.

The fact that erythroblastosis fœtalis is rare among Palestinian Jews led us to expect a low incidence of Rh-negative persons among them. The fact that the

TABLE I—RH FINDINGS IN DIFFERENT RACES

Author	Race	No. of cases	Rh-positive	Rh-negative
Traut et al. (1945)	White	7620	6485 (85·1%)	1135 (14·9%)
Levine (1942) ..	Negro	264	252 (95·5%)	12 (4·5%)
Ranganathan et al. (1946)	Hindus	145	139 (95·9%)	6 (4·1%)
Landsteiner and Wiener (1941)	American Indians	120	119 (99·2%)	1 (0·8%)
Levine and Wong (1943)	Chinese	150	149 (99·3%)	1 (0·7%)
Miller and Taguchi (1945)	Japanese	180	.. 99·4%	.. 0·6%
Lubinski et al. (1945)	Jews	967	886 (91·6%)	81 (8·4%)
Gurevitch et al. (present series)	Jews (Jerusalem)	1913	1730 (90·4%)	183 (9·6%)

Jewish community in Jerusalem is composed of groups of different origin adds to the interest of this study.

INVESTIGATION AND RESULTS

The material included in the present investigation consists of 940 women attending the prenatal clinics of the Hadassah Medical Organisation, 372 women delivered in the obstetrical department of the Hadassah University Hospital, 214 cases taken at random from among hospital patients and personnel, and 387 women whose obstetric history suggested Rh incompatibility. The results of the investigation showed that 9·6% were Rh-negative. These figures are compared in table I with those found in other racial groups.

To determine the distribution of the Rh antigen among the various Jewish communal groups studied, we have divided our material according to the origin of the patients: (1) Ashkenazim, of European origin; (2) Sephardim, from Mediterranean countries (Egypt, Tunis, Morocco, Greece, Bulgaria, &c.); (3) Yemenites, originating from the Yemen; (4) Kurds and Persians, originating from Northern Iraq and Persia; and (5) combined minor groups of oriental origin (Georgians, Babylonians, Assyrians, and others). The results of these studies are summarised in table II.

From table II it is evident that two groups stand out as having a very small proportion of Rh-negative persons among them—the Yemenite and the Kurdistani-

TABLE II—RH FINDINGS IN DIFFERENT GROUPS OF JEWS

Group	No. of cases	Rh-positive	Rh-negative
Ashkenazim	1035	921 (89·0%)	114 (11·0%)
Sephardim	262	231 (88·2%)	31 (11·8%)
Yemenites..	44	43 (97·7%)	1 (2·3%)
Kurds and Persians ..	203	200 (98·5%)	3 (1·5%)
Combined minor groups..	369	335 (90·8%)	34 (9·2%)

Persian Jews. These groups contrast with the other communal groups, which have a ratio of Rh-negative persons nearer to that found in the white continental races, and it is perhaps significant that these two groups are noted for their segregated way of life, and intermarriage is very rare among them. Their very low proportion of Rh-negative persons is associated with an apparent absence of erythroblastosis fœtalis—out of 310 deliveries of Yemenite Jewesses and 1739 deliveries of Kurdistani-Persian Jewesses in the obstetrical department of this hospital during the last six years there has not been one case of erythroblastosis fœtalis.

It should be pointed out that our material comprises two clinically distinct groups: the one taken at random—i.e., not selected—and the other selected because the obstetric history suggested Rh incompatibility. The suggestive obstetric history was one in which, after one or more normal deliveries, there were stillbirths, premature deliveries, abortions, &c. Table III shows that the incidence of Rh-negative persons in these two clinically distinct groups among the Ashkenazi Jews was practically the same. This seems to indicate that the incidence of Rh-negative persons plays no important rôle in the general obstetric pathology (stillbirth, abortion, antenatal death, &c.), but it does not lessen the importance of Rh antigen as a decisive factor in hæmolytic disease of the newborn.

DISCUSSION

As pointed out above, hæmolytic disease of the newborn is relatively rare in Palestine. Out of 12,645 deliveries in the obstetrical department of the Rothschild Hadassah University Hospital, there have been 5 cases of erythroblastosis fœtalis and 1 case of congenital anæmia during the past eight years. If we are to assume, on the basis of our findings in 2000 cases, that the ratio of Rh-negative persons in our obstetrical material is about 10%, it means that the total number of Rh-negative women delivered in our department was about 1264. It follows that only 1 of every 210 Rh-negative women has given birth to a child with hæmolytic disease of the newborn.

TABLE III—RH FINDINGS IN ASHKENAZI JEWS

Group	No. of cases	Rh-positive	Rh-negative
Selected ..	483	429 (88·8%)	54 (11·2%)
Not selected ..	552	492 (89·1%)	60 (10·9%)

It has already been observed that the ratio of hæmolytic disease of the newborn to Rh-negative mothers is about 1 : 50 (Wiener 1945). Wiener (1946) has suggested that this is due to a constitutional factor, which he has designated "K" and which confers the ability to produce antibodies in response to an incompatible antigen. If Wiener's view is correct, it seems that, besides a relatively low incidence of Rh-negative persons among our material, there is also a reduced incidence of the constitutional factor K.

SUMMARY

Among 1913 Jews of different origin the incidence of Rh-negative persons was found to be 9·6%.

These included 203 Kurdistani-Persian Jews and 44 Yemenite Jews, in whom the incidence of Rh-negative persons was 1·5% and 2·3%.

Among 12,645 deliveries in eight years there were only 6 cases of hæmolytic disease of the newborn, an incidence of 1 in 210 deliveries. Among 2049 deliveries in Kurdistani-Persian and Yemenite Jewesses in six years there was not a single example of hæmolytic disease of the newborn.

The relation between the low incidence of Rh-negative persons and the rarity of hæmolytic disease of the newborn among them is discussed.

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MEMBRANOUS NATURE OF INTERSTITIAL CONNECTIVE TISSUE

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A PECULIARITY of interstitial connective tissue which has puzzled histologists for many years is the lack of correlation between its naked-eye and microscopical appearances.

To the naked eye this tissue appears in the form of membranes of various thicknesses. These membranes present considerable obstruction to the spread in the tissues of effusions of blood, inflammatory exudates, and malignant tumours and may therefore be considered to be relatively impermeable to particles of the size of red blood corpuscles. In contrast the microscopical picture of connective tissue, whether derived from stained sections or from the examination of fresh tissue, in no way suggests a membranous structure; connective tissue appears to be composed of a network of fibres with occasional spindle-shaped or stellate cells, the meshes of the net being considerably larger than the particles to which connective tissue is so obviously impermeable.

It was suggested by Flemming [1] that connective tissue is not composed merely of cells and fibres but that these structures are combined into membranes by some sort of cementing substance. More recently Laguesse [2] claimed that he had demonstrated an essentially lamellar arrangement in connective tissue. The observations described here tend to confirm this conception of the structure of connective tissue and thus to bring its microscopical into conformity with its naked-eye appearance.

From a recently killed rat, a thin lamella of connective tissue was excised, moistened with neutral distilled water, and spread out on a glass slide. The corners were drawn out with filter paper until they became dry and adherent, whereupon they were firmly fixed with a drop of melted paraffin wax; meanwhile the main part of the preparation was kept moist. When the corners had become firmly anchored, the preparation was treated with dilute acid at a pH of 3·6, after which a coverslip was applied, and the edges of it were sealed to the slide with paraffin wax.

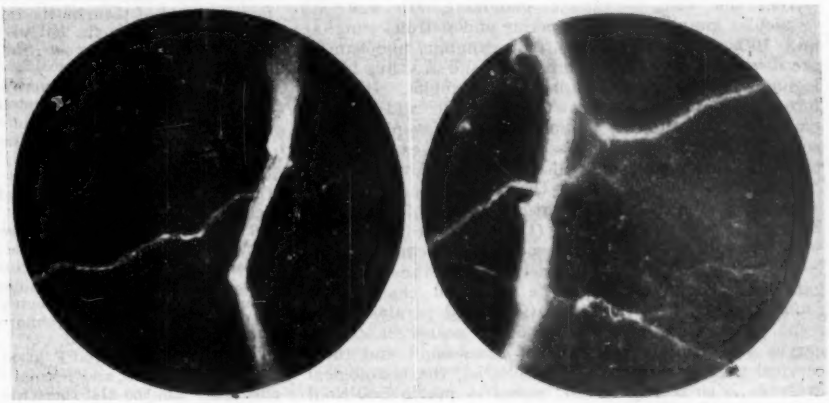
When the thinnest parts of such a preparation were examined microscopically with dark-ground illumination, the spaces between the brilliantly refractile collagen bundles were filled by a moderately dense opacity. Careful examination of this opacity with the highest magnification revealed that it was composed partly of a faint amorphous haze, partly of refractile granules, and partly of exceedingly fine angularly branching fibrils. The smallest collagen and elastic fibrils were embedded in the general opacity like twigs on the surface of a frozen pond. It must be emphasised that even when these structures were freely suspended in the mounting fluid, and not attached to either the slide or the coverslip, they lay in the same optical plane. With the slightest alteration in focus they all disappeared together. A similar effect was produced when the coverslip was gently pressed. The impression given was that of an extremely thin and tautly stretched membrane. In places the tension of the membrane had altered the alignment of the collagen bundles to which it was attached. Elsewhere, where the membrane had become unduly stretched, it had broken up into a system of branching fibrils with attached granules (see figure), the intervening opaque haze having disappeared. Networks formed in this way still tended to lie in one plane and looked like a cobweb. In places where the tension had been even greater the networks broke down into separate fibrils which no longer lay in the optical plane of the remainder and, when the coverslip was pressed, could be made to move independently.

Similar delicate membranes and cobweb-like networks were also observed in preparations treated for several hours in 50–60% ethyl alcohol at neutrality. However produced they seemed to be permanent structures. They did not disappear when the tissue was again mounted in neutral distilled water, nor even after prolonged treatment with 0·001*N* NaOH; but they disintegrated rapidly in the presence of trypsin.

The range of pH in which the membranes and cobweb-like fibrils were formed was precise. Between pH 3·6 and 3·9 they formed within a few minutes; at pH 4·2 their formation was much slower and incomplete; and at pH 4·6 they did not appear at all.

After fixation these preparations gave negative reactions for fibrin both when stained by phosphotungstic acid hæmatoxylin and by Weigert's method. The appearance of the cobweb fibrils on dark-ground illumination also differed entirely, both in delicacy and mode of arrangement, from that of fibrin.

The irreversible formation of these membrane-like structures within a narrow range of pH strongly suggests that the phenomenon is due to the precipitation of a protein at its iso-electric point; moreover the facility with which the membranes were disintegrated by trypsin seems to indicate that protein plays an essential part in their composition.



(a) (b)

Dark-ground picture of a piece of rat fascia mounted in distilled water: (a) at pH 7·0, showing two collagen bundles; (b) same field after treatment for several minutes at a pH of 3·7. Cobweb-like fibrils have appeared. They have been formed in a tautly stretched membrane of extreme thinness and therefore lie in the same optical plane. (× 600.)

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GLOSSOPHARYNGEAL ZOSTER

FOLLOWED BY VARICELLA IN TWO CONTACTS

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A CASE of zoster in the distribution of the glossopharyngeal nerve is reported here. Wilson (1940) reports a similar case and states that very little seems to be known of zoster in this distribution. Hunt (1910), however, cites a case reported by Chauveau in 1901 in which the vesicles were limited to the zone supplied by this nerve, and he lists, under the heading "herpes pharyngis," eighteen published cases of which at least five appear to refer to zoster, one (Lermoyez and Barozzi 1897) being bilateral. All of these cases may not have been glossopharyngeal in origin, for ipsilateral vesicles on the hard and soft palates may appear in geniculate zoster, owing, it is thought, to involvement of the greater superficial petrosal nerve (Wakeley and Mulvany 1939). The only reference I can find in the *Quarterly Cumulative Index Medicus* since 1920 to glossopharyngeal zoster, unassociated with facial paralysis, is a case reported by Gounelle and Warter (1934). Glossopharyngeal zoster in combination with geniculate zoster, characterised by facial paralysis besides the vesicular eruption, is described by Hunt (1910), McKenzie (1915, quoted by O'Neill 1945), Neve (1919), Dennis (1925, quoted by Watson 1941), Jacques (1931), Nattkemper (1932), Rabbiner (1938), Baldenweck and Degorce (1939), Watson (1941), and Negus and Crabtree (1943).

When the vagus nerve is involved, besides laryngeal vesicles, persistent nausea and vomiting are conspicuous features; in Watson's (1941) case they persisted five weeks. These symptoms were also prominent and persistent in the present case, but there were no laryngeal symptoms.

The ganglia connected with the following cranial nerves —viz., the 5th (semilunar ganglion), 7th and 8th (genicular ganglion), 9th (superior and petrous ganglia), and 10th (jugular ganglion and ganglion nodosum)— are developed from the neural crest and are thus homologous with the spinal posterior root ganglia. It therefore seems probable that the superior and petrous ganglia are primarily involved in glossopharyngeal zoster, and in the present case the jugular ganglion and the ganglion nodosum may also have been involved.

Doubt has been cast on the rôle of the genicular ganglion in the Ramsay Hunt syndrome of geniculate zoster. Denny-Brown et al. (1944) have reviewed the scanty histological reports and contend that characteristic lesions have not been demonstrated in the genicular ganglion. Though it must be admitted that lesions round the ear in conjunction with facial paralysis may result from various combinations of zoster of cranial nerves and from involvement of the second and third cervical ganglia (zoster occipitocollaris), the histological evidence is so scanty that it seems to me that O'Neill (1945) tends unnecessarily to belittle the probable rôle of the genicular ganglion. Nevertheless, since zoster may spread beyond the confines of the ganglia and sensory neurones and involve spinal motor tracts (Taterka and O'Sullivan 1943) and may even cause encephalitis (Schiff and Brain 1930), and since aberrant vesicles and generalised vesicular rashes may develop, it is impossible to demarcate with certainty the sensory zone or motor connexions of a single ganglion from a solitary attack of zoster.

The eruption in glossopharyngeal zoster is seen as an ipsilateral involvement of the pharynx, tonsillar fossa, faucial pillars, and soft palate. Hunt (1910) considered that the posterior portion of the tympanum might also be involved, and this was described by Chauveau in 1901. I did not investigate this point carefully, but the lack of pain in the ear, after the eruption developed, suggests that the tympanum was not affected, and Wilson (1940) and Neve (1919) state that the tympanum was unaffected in their cases.

CASE-RECORD

A British male post-office official in Kenya, aged 47, had had varicella, with his sisters, at the age of 10 years.

The only other features of note in his previous history were recurrent troubles with the left parotid gland from 1933, culminating, in November, 1944, in the drainage, through the parotid duct, of a cystocele of the left parotid gland.

On Dec. 14, 1945, he began to have pain in the throat and, to a less extent, in the right ear for five days. During the first four days he continued at work.

On the sixth day I was called to visit him and found the temperature 100°F. There was a little cerumen in the right external auditory meatus and, so far as could be seen, only slight congestion of the tympanum.

In the pharynx there were several ovoid ulcers, about 0·8 cm. × 0·2 cm., on the posterior pharyngeal wall to the right of the midline.

A direct smear from a throat swab did not reveal any pathogens, and on culture only *Neisseria catarrhalis* and pneumococci were grown. Patient was given benzylsulphanilamide ('Proseptasine') 1 g. four-hourly. Next day the condition was unchanged, and another throat swab gave identical results.

Next day (Dec. 21), the throat being still more painful and the patient vomiting, he was admitted to the European Hospital, Nairobi, under my care. Temperature 100°F, pulse-rate 88. Besides the ulcers on the posterior pharyngeal wall, there was now a cluster of superficial ulcers of various shapes on the right half of the soft palate, each ulcer being surrounded by a linear erythematous zone.

These ulcers were arranged in groups, the most anterior reaching nearly to the junction between the soft and hard palates. Except one rather large oval ulcer, whose long axis was exactly in the midline of the posterior pharyngeal wall, all the ulcers were situated to the right of the midline and were scattered on the posterior pharyngeal wall, right tonsillar fossa, faucial pillars, and soft palate.

Next day other spots were noted: one on the nose in the midline, most of them on the right side of the chest and right arm, but a few to the left of the midline. One of these I saw in the vesicular stage; the others had already formed superficial raw areas.

The ulcers in the throat were extremely painful, and nausea persisted. Taste was not tested. The right ear had ceased to be painful, and the tympanum was not re-examined.

No lesions were seen on the protruded tongue, but patient said the back of the tongue felt sore but that the remainder of the tongue felt normal and appreciated taste normally. There were no lesions on the hard palate, buccal mucosa, or right pinna.

The preceding pain, the pyrexia, and the character and distribution of the lesions led me to diagnose glossopharyngeal zoster with some scattered aberrant lesions on the trunk, nose, and limbs. The remaining cranial nerves (with the probable exception of the vagus) were unaffected; no motor changes or other physical abnormalities were detected. The larynx was not examined.

Temperature was 100°F at night on the 21st and 22nd, 99·2°F on the 23rd, and normal on the mornings of the 23rd and 24th. On the 21st there were 9100 leucocytes per c.mm. (neutrophils 77%, lymphocytes 20%, mononuclears 3%).

After patient's admission to hospital no more sulphonamides were administered, but he was given aspirin gargles, nicotinic acid, and phenobarbitone, and the ulcers were swabbed with 1% cocaine, without much relief being obtained. I regret that I did not administer pituitrin.

On the 24th patient felt somewhat improved and went home for Christmas. Nausea and frequent vomiting persisted.

I re-examined him on the 29th and found the pharynx practically normal, only a few injected spots being discernible. The bowels were open normally, but nausea and vomiting continued. These symptoms suggested involvement of the right vagus nerve. Radiography after a barium meal on Jan. 7, 1946, gave no evidence of an organic lesion in the stomach or duodenum.

Nausea, with occasional vomiting, persisted a further ten days, since when patient has been in normal health,

except that three months later he still experiences some discomfort in the right side of the pharynx.

Varicella in Contacts.—On Jan. 2, 1946, patient's daughter, aged 13 years, and two days later her brother, aged 4 years, exhibited typical varicella rashes.

The development of varicella by the patient's two children living at home, 14 and 16 days after the father's eruption, strongly supports the diagnosis of zoster. The case is therefore presented as one of zoster of the right glossopharyngeal nerve with probable involvement of the right vagus nerve.

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Preliminary Communication

DETECTION OF LATENT GENITAL TUBERCULOSIS BY CULTURE OF MENSTRUAL DISCHARGE

LATENT female genital tuberculosis is commoner than has been hitherto suspected, as shown by endometrial biopsies in cases of primary sterility in women without any clinical symptoms pointing to either general or genital tuberculosis.

Berblinger [1] found only 7·8% of genital tuberculosis in 320 necropsies on women who died of pulmonary tuberculosis.

Lackner et al.[2] found the same percentage in necropsies on tuberculous women. The fact, however, that they found tuberculous endometritis in only 1·6% of 125 women with active pulmonary tuberculosis who were submitted to endometrial biopsy is very significant.

This is in contrast with the results obtained by Schockaert and Ferin [3] in Belgium, Sutherland [4] in England, and Rabau et al.[5] in Palestine, who found tuberculous endometritis in an average of 5% of women with primary sterility.

A still higher incidence of tuberculous endometritis was found by me [6] in sterile women in whom salpingography showed a tubal occlusion.

Hitherto endometrial biopsy has been considered the most reliable criterion of genital tuberculosis in a woman; but it can give a positive result only when tuberculosis has already reached not merely the endometrium but also the particular portion of it removed for scrutiny. Further, the manipulation with instruments of women suspected of genital tuberculosis is not devoid of danger. In 5 of our patients with tuberculous endometritis curetting was followed by severe pelvic peritonitis.

Nor have the various specific and aspecific tests contributed much to the diagnosis of latent genital tuberculosis. The erythrocyte-sedimentation rate was normal in all cases of tuberculous endometritis. The intradermal tuberculin reaction (Mantoux) was in most cases positive; but this does not prove much in adults and certainly does not indicate the structures involved. For the same reason we have abstained from using the complement-fixation test.

Theoretical and practical considerations led us to try to isolate the *Mycobacterium tuberculosis* in the menstrual discharge by means of specific culture media.

TECHNIQUE

The menstrual discharge is a mixture of blood, mucus, and parts of the endometrium. The blood is found in the vagina partly in a non-coagulated condition. We removed as much material as possible from the fornix and the os with a vaginal speculum and transferred it to a sterile test-tube containing 1 ml. of our anticoagulant solution, using Petragnani's specific culture medium. The women were told to report the first or second day of the menses. We consider it imperative to repeat the test at least thrice in the same patient, because often we obtained positive results only after one or two negative tests. Only positive tests are to be considered; negative results do not exclude genital tuberculosis.

MATERIAL AND RESULTS

The menstrual discharges of 80 women with primary sterility were examined. Among them were 10 women in whom endometrial tuberculosis had been found before this test, and in 2 others genital tuberculosis was clinically suspected. Of 140 tests made in these 80 women, in 9 cultures colonies of *M. tuberculosis* were found, whereas 19 others showed non-pathogenic acid-fast bacilli.* In 3 cases of cultures containing *M. tuberculosis* the results were confirmed by animal tests. By the same methods the menstrual blood of 30 healthy women who previously had given birth to at least one child was examined as a control, and in only 1 case did non-pathogenic acid-fast bacilli grow. The 9 positive cultures came from 6 women whose histories follow:

Case 1.—A woman of 34 with eight years' primary sterility. Five years ago we had found that she had tuberculous endometritis. Manual examination of genitalia negative. Mantoux positive. Radiography of lungs normal. For the last three years she had had tuberculosis of the kidneys.

Menstrual blood on culture gave *M. tuberculosis* in 4 tests made in 4 consecutive menses, whereas cultures from peripheral blood were negative. Animal tests were positive.

Case 2.—A woman of 28 with five years' sterile marriage. Result of endometrial biopsy suggested tuberculous endometritis. Bimanual examination of genitalia negative. Erythrocyte-sedimentation rate normal. Lungs normal.

Cultures of menstrual discharge gave negative results twice, but the third time gave *M. tuberculosis*. Animal tests positive.

Case 3.—A woman of 32. Bimanual examination revealed a tumour the size of an average apple in the region of the right adnexa, probably inflammatory in origin. Cultures gave at first a negative result; the second test, however, was positive.

Case 4.—A woman with three years' primary sterility. Endometrial biopsy showed no sign of tuberculosis. Cultures of menstrual discharge were positive for tubercle bacilli. Culture of peripheral blood negative.

Cases 5 and 6.—Two women with primary sterility of one or two years' duration. No genital or other tuberculosis suspected. Cultures of their menstrual discharges grew *M. tuberculosis*.

All the bacteriological tests were made in the central laboratories of the Kupath Cholim, Tel Aviv.

DISCUSSION

The possibility of cultivating *M. tuberculosis* from menstrual discharge on specific culture media is of great practical importance. It is not difficult to distinguish morphologically *M. tuberculosis* from non-pathogenic acid-fast bacilli. Even the macroscopical appearances

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* Non-pathogenicity was determined by the cultural characteristics, and in 6 cases by guineapig inoculation.

of the colonies are completely different. In doubtful cases, however, it is advisable to inoculate the material from the cultures into animals to test their pathogenicity.

In cases where genital tuberculosis is clinically suspected the culture of menstrual discharge is the only safe method of establishing the diagnosis. Further, it is advisable to examine menstrual discharge at least thrice in cases of primary sterility before engaging in intra-uterine intervention (insufflation, salpingography, endometrial biopsy).

The presence of *M. tuberculosis* in the menstrual blood is, in all probability, not due to a bacteræmia. In all those cases in which the peripheral blood was examined no *M. tuberculosis* were found, though the menstrual blood was positive.

It is not yet known how far these women are dangerous to their environment owing to the discharge of *M. tuberculosis* in the menstrual blood. Though the husbands of these women do not show any inoculation of tuberculosis on their genitalia, such women are advised to take precautions against the possibility of disseminating *M. tuberculosis* in their menstrual blood.

SUMMARY

The menstrual discharges of 80 women with primary sterility were examined by means of specific culture media for the presence of *M. tuberculosis*.

Out of 140 tests there were 9 positive findings in 6 patients.

In 19 cultures only non-pathogenic acid-fast bacilli grew.

I wish to thank Dr. E. L. Bregman, director of the laboratories, and his collaborators, Miss Miriam Perechodnik and Mr. N. Vigodsky, for their inestimable help; and Professor Klopstock for valuable suggestions, and providing facilities for the animal tests.

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Reviews of Books

Obstetrics and Gynæcology

A Revision Course for Practitioners. C. SCOTT RUSSELL, M.A., M.B., F.R.C.S.E., M.R.C.O.G., assistant director, department of obstetrics and gynæcology, University of Manchester. London: Oxford University Press. 1947. Pp. 211. 13*s*. 6*d*.

THIS is a book of truly remarkable brevity, which within its small compass manages to say a great deal, all of it orthodox and sound. It cannot, however, be regarded as more than a refresher. The subject of gynæcology is literally written off in under 50 pages, whereas X-ray pelvimetry in disproportion is given disproportionate prominence, considering that this is a luxury which the average practitioner must usually do without. It is hinted, however, that this book is for the doctor whose life in the Armed Forces has sheltered him, for a while, from the wrath of the P.P.H. to come; and its avowed purpose is to stimulate him to renew his acquaintance with the subject. Within these limitations it is admirable.

The Doctor and the Difficult Adult

WILLIAM MOODIE, M.D., F.R.C.P., D.P.M., physician, department of psychiatry, University College Hospital. London: Cassell. 1947. Pp. 296. 15*s*.

Dr. Moodie has exceptional knowledge of the "difficult" of all ages. Here he deals with those who have the years but not the discretion of the fully grown. As might be expected, his book is simply written, wise, and full of common sense.

The writer of a non-technical book dealing largely with the neuroses is, however, beset by a special difficulty: any simplified account of psychotherapy is apt to leave the reader asking "Is that all there is to it?" Even Dr. Moodie, with all his skill, tends to leave the impression that good will and common sense are not only necessary but also sufficient.

He may be said to belong to the English eclectic school. Eclectic, because he acknowledges no allegiance to any one predecessor; English, because of his empiricism, his freedom from general principles or a-priori concepts. English, too, in the convention that normality implies understatement—indeed, denial—of emotion, feeling, æsthetic sensibility, or intellectual probing. His philistine values sometimes shock in several ways at once:

> "The law in English-speaking countries still looks upon homosexual acts as illegal and punishable. . . . There can be no doubt that the law in England is right."
>
> "The usual religious teaching which means Bible study by children who cannot understand it and learning the Catechism by memory under the supervision of uninterested teachers . . . would usually be better left alone, and the same applies to sex teaching."

It is all the more impressive that he comes out as an uncompromising opponent of corporal punishment. And here he takes the trouble to present us with evidence, not prejudice.

The chapter on the approach to the difficult patient is particularly good, giving some of the details and fine points which are the harvest of psychiatric experience, and which form no part of the equipment of the well-intentioned but untrained.

Cancer: Diagnosis, Treatment and Prognosis

LAUREN V. ACKERMAN, M.D., pathologist to the Ellis Fischel State Cancer Hospital; JUAN A. DEL REGATO, M.D., radiotherapist to the hospital. London: H. Kimpton. 1947. Pp. 1115. £5.

THE authors have provided a satisfactory guide, though they have not altogether overcome the difficulty of giving an adequate outline of treatment without entering into detail. Special efforts are being made in the United States to ensure early diagnosis. Michael B. Shimkin summarises cancer research, the histological studies of the early oncologists, animal tumours, carcinogenesis, the rôle of heredity, and the effects of œstrogens and other hormones, rounding off with a section on cancer theories. Biopsy methods are discussed, and there is a short general chapter on surgery. The account of radiotherapy wastes space on elementary radiation physics and technical aspects of X-ray therapy which have had to be so condensed as to have little value. Cancer of the skin is well described and illustrated, and there are useful notes on ætiology and on the lesions which simulate skin cancer. The section on treatment of cancer of the mouth and tongue is poor, the diagram of radium implantation of the tongue showing an old-fashioned type of implant. The discussion of cancer of the larynx shows the influence of the French school, and the descriptions of the various cancers found in the alimentary tract, from œsophagus to rectum, should be very useful to senior students. The authors insist on the curability of cancer of the female generative organs. The book is completed by sections on tumours of bone, sarcoma of the soft tissues, and Hodgkin's disease and the leukæmias.

Well planned and readable, the book will be serviceable to all cancer students, though radium is not given its true place as the most effective weapon we have at present against many of the accessible cancers. The important work of the British school on radium dosage, and the results obtained, are almost ignored, which must inevitably bias the choice of treatment in America.

Manual of Physical Diagnosis (3rd ed. Chicago: Year Book Publishers; London: H. K. Lewis. 1947. Pp. 351. 27*s*. 6*d*.).—It is only meet that a steady stream of books on physical diagnosis should be issuing from the home of laboratory medicine. The special feature of this one is that it is concerned mainly with the respiratory and circulatory systems, although there are also brief sections dealing with the abdomen, the genitalia, and the central nervous system. Dr. Ellis B. Freilich, Dr. George C. Coe, and Dr. Joseph Freilich have made a laudable attempt to correlate physical signs and pathology, and the book can be safely recommended to the student as an introduction to clinical medicine.

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THE LANCET

LONDON: SATURDAY, DEC. 27, 1947

Health at the University

A CONFERENCE held last summer [1] at the Institute of Social Medicine in Oxford, and attended by delegates from 15 universities, 11 medical schools, and various other important bodies, gave the academic world a signal for action. It has long been recognised that welfare provisions in British universities are in many ways inadequate, and that the health and sickness of students have had too little attention. Abroad, organised health examinations, including radiography of the chest, were instituted in Munich as early as 1927 and later extended through the German universities; in the United States the leading universities have set an example in the same way; and in 1938 an international university conference devoted five days to a discussion in which 50 representatives from 15 nations advocated compulsory health examination. Both the Goodenough Committee and the Royal College of Physicians committee on social and preventive medicine have strongly recommended the universities to establish student health services, and the students themselves—through the National Union of Students, the British Medical Students Association, and other groups—have sent out questionaries and published thoughtful memoranda on their own needs. Of recent years a few British universities and several medical schools have started partial services; but a fully operative service, making proper provision for periodic health examination and care in sickness, has yet to be announced. While memoranda have accumulated, and a few pioneer undertakings have been launched, the governing bodies of all but a few universities have remained largely inactive: they have had other pressing responsibilities, accentuated by war and its sequelæ. Now, however, there are signs of awakening interest, and the inauguration of the National Health Service (though in its early phases it will be more concerned with sickness than with health) should provide an occasion for new thought and concerted enterprise.

With the costs of illness covered, those who have to provide for the young will increasingly concentrate on earlier detection of defects and on the prevention of any form of disability; and the success of child-welfare centres and school medical services fully justifies extension of interest to the next age-group. The university student is, after all, still in a stage of growth and development: like the youthful entrant to industry, for whom special welfare measures are now required, he is exposed to new hazards on leaving home and school, and for medical students in particular these include exposure to tuberculosis and other infections. Furthermore, the undergraduate is at a stage of his educational career when the contribution of health to the evolution of the "whole man" can be usefully emphasised and related to the general academic culture. Nowadays too many of those admitted to universities on the score of scholarship are found to be of poor physique and liable to break down under the stress of a curriculum ill adjusted in its mental and physical demands. Surely the time has come to recognise that the health of this large body of young and partially selected adults, from whose ranks will be drawn a high proportion of the leaders and teachers of the future, matters at least as much as the health of recruits to the Armed Forces.

This week we publish papers by physicians concerned in various ways with student health at universities of widely differing character and tradition. Dr. PARNELL, of Oxford, describes the findings in a group of students presenting themselves voluntarily for a health examination, and refers to the need of many of them for simple psychological help. Dr. MACKLIN, of Aberdeen, presents the case for a comprehensive service and reviews organisation, staffing, and costs. He thinks that the same doctor should be responsible for health and sickness, and that he should have beds for investigation and for the treatment of minor illness. Dr. BOLTON, of Birmingham, develops the interesting theme of compulsory physical education during the first undergraduate year, claiming a place for it in the curriculum and emphasising the social as well as the physiological benefits of a well-organised system allowing the student plenty of choice. No doubt he is right in saying that "the native resentment of compulsion is, after all, something of a bogy." At British universities compulsory medical examination has never been suggested as a means of selection or exclusion; it takes place after entry and is intended to give the student a better prospect of enjoying and profiting by his scholastic course and of avoiding interruptions by sickness. Again, in favour of making physical education compulsory Dr. BOLTON can fairly plead that mental education is already based on compulsion; attendance at lectures has long been obligatory, and compulsory attendance on the field or in the gymnasium he regards as a corollary, designed to bring physiological and social balance into a system which has put too much emphasis on midnight oil and competitive examinations. If it is really true, as preliminary surveys suggest, that some 80% of university students take no regular part in games or other health-giving outdoor activity, it is certainly time that the conditions and purposes of a modern university training were reviewed. In the hands of some of its Continental exponents the cult of physical fitness has shown an unattractive side; and most of us like to think of a university as a place where undergraduates enjoy a great deal of freedom—especially perhaps, to make mistakes. There must, however, be many remedies besides compulsion applicable to institutions where a majority of young people do not follow their natural bent towards athletic pursuits, and undoubtedly a great deal more could usefully be done for the average student—even if the aim is simply to make him healthy enough to be unaware of his health. There will be warm support for our colleagues who take up this important new work.

1. *Lancet*, 1947, ii, 318.

Three Drugs against Tuberculosis

AMONG the bacterial infections which have hitherto proved resistant to chemotherapy, pulmonary tuberculosis stands out as the main killing disease affecting the productive groups of the population. Hence the keen public interest taken in any agent found to be active against *Mycobacterium tuberculosis*. In his Mitchell lecture last year, HART [1] divided these agents into purely synthetic substances with no known counterpart in nature; synthetic compounds related to some natural substance which has served as starting-point of the series; and substances of biological origin. Clinical trials of a representative of each of these three categories have been reported within the past few weeks.

'Sulphetrone,' a promin-like substance, was synthetically prepared in 1936, but its antituberculous properties were not recognised until 1941. It is more soluble in water and considerably less toxic than many other sulphones. It exerts a moderately suppressive effect on experimental tuberculosis in guineapigs, and this effect is enhanced by synergistic action when the drug is used in conjunction with streptomycin. Last week MADIGAN and his colleagues [2] reported 6 cases treated with sulphetrone by mouth and streptomycin parenterally, and 11 cases given streptomycin alone. Owing to the small numbers, the variety of clinical types, and the absence of controls, the results are difficult to assess and comparison between the two groups is open to doubt. In both, temporary regression seems to have been produced, particularly in miliary tuberculosis, but relapses have tended to follow later, sometimes associated with the development of streptomycin-resistant strains of the tubercle bacillus. Nevertheless, the experimental evidence of synergism between sulphetrone and streptomycin, coupled with the possibility of maintaining reasonable blood-levels of sulphetrone in man safely for long periods, suggests that this combination should be tried in larger and more homogeneous series of selected types of disease, especially acute miliary and meningeal tuberculosis. This preliminary trial makes it unlikely that the onset of streptomycin-resistance can be retarded or prevented by the coincident use of sulphetrone, for increased resistance was found in strains isolated from patients after three months' treatment with both drugs together.

The introduction of *para*-aminosalicylic acid (P.A.S.) by LEHMANN [3] arose from BERNHEIM's observations that the addition of benzoic and salicylic acids increased the oxygen uptake of washed suspensions of tubercle bacilli; this suggested that substituted similar compounds might interfere with the normal oxidations of the bacilli and so inhibit growth. The Swedish workers found P.A.S. strongly toxic to guineapigs, but FELDMAN and others [4] at the Mayo Clinic demonstrated considerable suppression of experimental tuberculosis in these animals. Owing to the difficulties of manufacture and the large doses required, P.A.S. has been scarce, but about 100 cases of various types of clinical tuberculosis have been treated with it in Sweden.[5] The drug was given mainly by mouth and no serious toxic effects were noted. The reasons for crediting the drug with the improvements noted were not strong, and acute miliary and meningeal tuberculosis were unaffected. The 19 pulmonary cases, 13 of them complicated by other lesions, treated with this drug at Grove Park Hospital and lately reported by DEMPSEY and LOGG,[6] also showed a suggestive though not convincing response.

Recent reports on streptomycin confirm its clinical promise in some tuberculous conditions. The preliminary review [7] of the investigation on which the United States Veterans Administration and Army and Navy have been engaged since June, 1946, covers 543 patients, including 245 pulmonary and 84 miliary and meningeal cases who had finished treatment or died. This account should be taken in conjunction with the recommendations of the American Trudeau Society,[8] published simultaneously. Outstanding findings are the regressive effects of streptomycin in acute miliary tuberculosis and tuberculous meningitis, already demonstrated by the Medical Research Council trial in this country. Striking benefit was also noted in laryngeal and tracheobronchial ulcerations, and in cutaneous sinuses, conditions which can be directly observed. Regarding pulmonary tuberculosis the provisional verdict is much more cautious. As would be expected, chronic fibrocaseous disease is little affected and chronic cavities rarely close. The exudative elements of pulmonary tuberculosis, including bronchopneumonia, seemed to run a more favourable course, compared with past clinical experience—not a very reliable guide—but the improvement was most definite during the first three months of therapy; relapses sometimes occurred during the latter part of the course and were noted in a fifth of the cases after the cessation of treatment; seldom, moreover, did all exudative lesions resolve in a given patient. The two bugbears of streptomycin are acquired resistance and chronic toxicity (particularly affecting the labyrinth), and on account of these the American workers advise against its use in minimal or early pulmonary tuberculosis with favourable prognosis, or where conventional therapy seems likely to be effective. Thus in pulmonary tuberculosis streptomycin must be looked on as an adjunct to the well-established methods of treatment. In genito-urinary and bone and joint tuberculosis the limited trials have so far yielded inconclusive results. The broad conclusions of these American reports are reinforced by the preliminary results in tuberculous meningitis treated at the Sick Children's Hospital, Paris.[9] Of the 118 children receiving streptomycin, 46 who have been treated for from two to ten months are "behaving like normal beings," though their ultimate fate is, of course, an open question and the number given in the detailed table (of later date than the text) as "well" or "condition good" is only 25. The experience in Paris emphasises the vital factor of early diagnosis (and the value of retinal examination); the importance of steering between inadequate dosage

1. Hart, P. D'Arcy *Brit. med. J.* 1946, ii, 805, 849.
2. Madigan, D. G., Swift, F. N., Brownlee, G., Payling Wright, G. *Lancet*, Dec. 20, p. 897.
3. Lehmann, J. *Ibid*, 1946, i, 15.
4. Feldman, W. H., Karlson, A. G., Hinshaw, H. C. *Proc. Mayo Clin.* 1947, **22**, 473.
5. Vallentin, G. *Svenska Läkartidn.* 1946, **43**, 2047. Alin, K., Diös, H. *Nord. Med.* 1947, **33**, 151.
6. Dempsey, T. G., Logg, M. H. *Lancet*, Dec. 13, p. 871.
7. *J. Amer. med. Ass.* 1947, **135**, 634.
8. *Ibid*, p. 641.
9. Debré, R., St. Thiéffry, Brissaud, E., Nouffiard, H. *Brit. med. J.* Dec. 6, p. 897.

and an amount sufficient to cause toxic reactions (particularly those related to thecal or meningeal irritation); and the possible significance of the lymphocyte-count of the cerebrospinal fluid in prognosis. Streptomycin is clearly of short-term radical benefit in some cases of tuberculous meningitis, though the various factors involved and the best schedule of administration have yet to be worked out. Much will be expected on these points from the current Medical Research Council trials.

The discovery that tuberculosis can after all be affected by systemic drugs may lead enthusiasts to disregard the strict criteria for assessing the efficacy of treatment ably set out by HINSHAW and FELDMAN.[10] There are already signs that the improvement noted in a hotch-potch of cases, without untreated controls, will be ascribed to some new drug, without regard to the possibility of spontaneous remission. If this happens the pre-streptomycin story of faded hopes will be repeated. It took but a few months of enterprise to introduce tuberculin and 'Sanocrysin' into treatment on a world scale, but more than a decade of scientific slogging to evict them. With streptomycin we have the impressive results in meningitis and miliary tuberculosis to justify the setting up of a limited public service by the Ministry of Health on the advice of the Medical Research Council. But the indiscriminate use of the drug in every type of tuberculosis, which commercial vigour has stimulated in the U.S.A., must be guarded against. Apart from risk to the patient of his tubercle bacilli becoming streptomycin-resistant, there is the wider public-health danger of new cases arising in which the strain is primarily resistant—for example, in infants infected by mothers treated with streptomycin. So the M.R.C. has the unenviable responsibility, not only of assessing the value of the antibiotic and deciding on the best schemes of dosage in various forms of tuberculosis, but also of advising how it should be distributed for public use in appropriate conditions only. While British production is in the pilot stage the council is unlikely to be hustled.

Fibrocystic Disease of the Pancreas

INFANTS who fail to thrive and eventually succumb from a combination of diarrhœa and respiratory infection are sadly familiar in practice. The necropsy usually discloses no convincing cause of death, and doubt remains as to which of the two main symptoms was primary or whether both were secondary to some other fundamental disturbance of nutrition. It now appears that in at least a considerable proportion of these cases there are widespread pathological changes in the pancreas which interfere with the secretion of pancreatic juice and thus impair digestion. Other changes in the body may be secondary to malabsorption of essential foods and vitamins. The principal necropsy finding in the pancreas is dilatation of the acini and ductules from blockage of the lumen with tenacious inspissated material; and the surrounding tissue undergoes pressure atrophy and progressive fibrosis. The condition has been named "fibrocystic disease of the pancreas," but there is no true cyst formation, and the fibrous tissue which develops is not prominent in early cases and must be considered secondary. These changes are present at birth and are progressive. There is no evidence of infection and the islet tissue is intact. The main pancreatic duct is normal, and the few cases in which atresia has been reported probably represent a separate condition with somewhat similar clinical effects. According to HOWARD [1] there is a fairly high familial incidence. Chronic suppurative inflammatory changes in the lungs are constantly found in those infants who survive for more than a few weeks; these consist of varying degrees of purulent bronchitis, bronchiectasis, or bronchiolectasis. The respiratory passages are obstructed with tenacious mucoid or mucopurulent material, and the walls are infiltrated with inflammatory cells. Fibrosis follows in those who survive. Keratinising squamous metaplasia is sometimes present in the trachea and bronchi, and occasionally in other organs. Fatty changes in the liver are a common finding.

Isolated instances of this pancreatic disorder, encountered post mortem, have been reported for some years; but its association with symptoms and signs during life was not appreciated and its frequency was quite unsuspected until ANDERSEN [2] drew attention to it in 1938. Her paper was closely followed by three others,[3] each reporting a considerable series of cases, and there have since been numerous reports. There are several reasons for this delay in identifying what now seems to be a definite clinical and pathological entity. In the first place, pathologists did not recognise the condition because, despite the striking microscopical changes, there is usually little to be seen with the naked eye; and they had not been accustomed to making routine sections of the pancreas in infants or young children who had apparently died of respiratory disease. However, with increasing awareness and suspicion, the incidence has been established at about 3% of all infants who come to necropsy [4]; though in one series [5] the incidence was as high as 12%. Clinically, the condition was not recognised because of its similarity to other disorders, particularly respiratory and gastro-intestinal infections in infants and cœliac disease in older children. Symptoms usually appear soon after birth, and infants may die within a few days with intestinal obstruction due to meconium ileus, which is believed to result from the lack of pancreatic enzymes. In other cases symptoms do not develop until later in childhood. Manifestations may be divided into three main groups: gastro-intestinal, respiratory, and nutritional. Digestion is impaired through lack of trypsin, amylase, and lipase; the stools, which are at first loose, become pale and bulky when solid foods are given. Cough develops early and becomes increasingly troublesome; scattered physical signs may be found in the chest, but there is no evidence of frank consolidation. In infancy, X-ray examination is not likely to show more than increased hilar shadows and basal markings; but later on, if the child survives, there will be patchy areas of opacity from consolidation, collapse, and emphysema. The general picture

10. Hinshaw, H. C., Feldman, W. H. *Amer. Rev. Tuberc.* 1944, **50**, 202.

1. Howard, P. J. *Amer. J. Dis. Child.* 1944, **68**, 330.
2. Andersen, D. H. *Ibid*, 1938, **56**, 344.
3. Harper, M. *Arch. Dis. Childh.* 1938, **13**, 45. Thomas, J., Schultz, F. W. *Amer. J. Dis. Child.* 1938, **56**, 336. Blackfan, K. D., May, C. D. *J. Pediat.* 1938, **13**, 627.
4. Menten, M. L., Middleton, T. O. *Amer. J. Dis. Child.* 1944, **67**, 355.
5. Farber, S. *Ibid*, 1942, **64**, 953.

resembles that of any chronic wasting illness with secondary bronchopneumonia. In spite of a good appetite, the infant becomes increasingly undernourished. Cœliac disease rarely develops before the age of nine months, and the association of chest symptoms with loose stools should suggest pancreatic disease. The diagnosis can be confirmed by examining the pancreatic juice. All the pancreatic enzymes are deficient, but it is only necessary to estimate the trypsin, which is not difficult. A duodenal tube is passed, preferably under X-ray control, and the power of the juice to digest gelatin is analysed by the methods of ANDERSEN and EARLY.[6] Chemical examination of the stools and other laboratory tests are not of diagnostic value, for they merely reveal the presence of malabsorption and malnutrition. The glucose-tolerance curve is usually normal; nitrogen excretion is increased; and changes in the fat content of the stools are similar to those in cœliac disease, the fat being partially split by a lipase in the succus entericus but too late for proper absorption. The vitamin-A absorption curve is low, and this was at one time suggested as a diagnostic finding; but it may be found in any condition associated with impaired fat-absorption. The condition resembles cœliac disease in the wasting, distension, and diminished fat-absorption, but cœliac disease can be distinguished by the later onset of symptoms, the poor appetite, the lack of constant respiratory infection, and the normal enzyme content of the duodenal juice.

The fundamental cause of fibrocystic disease of the pancreas remains a mystery. At one time it was suggested that the whole condition might arise from vitamin-A deficiency, but more probably this deficiency, when present, is a secondary manifestation. Other possibilities are congenital malformations or inflammation of the pancreas during fœtal life. FARBER [7] believes that the basic lesion is a physically altered secretion which obstructs the small pancreatic ducts; and with this disorder he has found evidence of similar changes in secretion elsewhere in the body, especially in the lungs, duodenum, and biliary tracts. He postulates that this results from disturbance of autonomic nervous control, and he claims to have produced similar lesions experimentally in kittens. There is no doubt, from clinical observations, that lack of pancreatic juice is responsible for the diarrhœa and malnutrition, and these can be greatly improved by treatment. The intake of food must not only be sufficient to cover the inevitable losses through imperfect digestion, but enough to satisfy the requirements of appetite, energy, and growth. Full use should be made of modern predigested foods; casein hydrolysates can now be obtained in palatable form, and if given in sufficient quantity will supply all the protein needed. To these may be added extra carbohydrate, in the form of glucose, minerals, and vitamins; and pancreatin can usefully be given with solid foods when these are begun. Chemotherapy and penicillin have materially improved the outlook as regards the respiratory infection; but suppurative changes in the lungs, once started, are likely to progress, and the pancreatic lesion itself is irreversible. While the ætiology remains obscure, therefore, the outlook for these cases is poor.

6. Andersen, D. H., Early, M. V. *Ibid*, 1942, **63**, 891.
7. Farber, S. *Arch. Path., Chicago*, 1944, **37**, 238.

Annotations

CHLOROMYCETIN: AN ANTIBIOTIC EFFECTIVE BY MOUTH

THE latest antibiotic is derived from a streptomyces found in a sample of soil brought from Caracas, Venezuela.[1] From filtrates of submerged aerated cultures of this organism a crystalline substance, chloromycetin, has been obtained. This is probably a chemical entity, since it has a definite composition, melting-point, and optical rotation, and it is unique in containing both nitrogen and non-ionic chlorine. Unlike penicillin it is stable over a wide range of pH and will withstand boiling for five hours. Chloromycetin is active in vitro in dilutions of 1 in 3,000,000 against *Brucella abortus*, *Bact. coli*, *Friedländer's bacillus*, *Proteus vulgaris*, and *Staphylococcus aureus*, and in much higher concentrations (1 in 80,000) against the tubercle bacillus. Judging by tests on mice it should be possible to get a concentration of 1 in 80,000 in human tissues without producing toxic effects. Its discoverers have not yet performed in-vivo tests with chloromycetin in tuberculosis, but screening tests with the pure material showed a striking chemotherapeutic activity against *Rickettsia prowazeki*, using chick embryos, and against a number of other rickettsial agents when tested on embryonated eggs.[2] From 24 eggs infected with the Gilliam strain of *R. orientalis* and protected by chloromycetin 8 live chicks were eventually hatched. The chemotherapeutic effect of the drug in mice infected with scrub-typhus was equally satisfactory, even when it was administered as late as ten days after infecting the animals.

These preliminary observations suggest that chloromycetin is well worth a clinical trial in tuberculosis and rickettsial infections. It not only is of low toxicity but has the great merit of being active when given by mouth, and in rickettsial infections it is effective late in the disease. At the moment the only promising drug against the rickettsias is *p*-aminobenzoic acid, which is not free from toxic effects.

IMMUNISATION AND THE DIPHTHERIA CARRIER-RATE

DOES mass-immunisation against diphtheria increase the carrier-rate among immunised children? In the opinion of Dr. V. F. Soothill,[3] M.O.H. of Norwich, this question has still to be satisfactorily answered. During the spring of 1944, a period of low incidence of diphtheria in Norwich, he made a random selection from the immunisation records of 100 children of each sex in the age-groups 2–5, 5–10, and 10–14 years. Care was taken to choose children attending well-scattered schools or welfare centres, or living in appropriate districts. As controls, a random selection of "comparable" children was made among the non-immunised. Immunised children were further divided into those whose post-Schick tests were known to be negative and those who had not been Schick tested. The checked counts of immunised Schick-immunes were 1333 immunised and 1061 non-immunised. Allowing for the immunised with and without negative post-Schick tests, these totals became: immunised 1377, non-immunised 1017. Swabbings from nose and throat obtained from all children in the latter two groups were examined for *C. diphtheriæ* and yielded 2 positive results in each group.

Unsatisfied with this statistically insignificant result, Soothill arranged for the experiment to be repeated, using the same groups of children, in the winter of 1944–45 when it was thought that *C. diphtheriæ* was more abundant. Except that a different school nurse

1. *Science*, 1947, **106**, 417.
2. *Ibid*, p. 418.
3. *Med. Offr*, 1947, **78**, 191.

took the swabs, the conditions were the same. This time, the immunised yielded 2 carriers and the non-immunised none. With the exception of one avirulent *mitis* strain, all the *C. diphtheriæ* recovered were of the *intermedius* type (the cause of the few cases of clinical diphtheria in the city hospital). Soothill points out that, though still not statistically significant, these figures are comparable with those reported by the L.C.C. Public Health Department.[4] A parallel investigation in June, 1944, among 200 adults, mainly factory workers, drawn from widely separated parts of Norwich produced completely negative results.

Though gratified as an epidemiologist, Soothill is still unsatisfied as a statistician, and he asks for more investigations of carrier-rates among immunes and non-immunes, account being taken not only of the state of immunity but also of the degree of exposure. It is useless, as he says, to compare closed with open communities. In the former immunisation may not prevent a temporary rise in the carrier-rate if diphtheria is endemic,[5] but in communities where immunisation is extended to the greater part of the most susceptible population—the pre-school and school children—McKinnon [6] points out that there is a fall in the incidence of clinical cases and carriers and that both classes in the end virtually disappear. Thus in Toronto (population 650,000) in 1926, a pre-immunisation year, there were 1098 cases of diphtheria with 90 deaths, and 13,231 swabs were examined of which 2564 were positive. In 1936, when 104,449 persons were known to have been immunised, there were 48 cases of diphtheria with 2 deaths, and 4307 swabs were examined of which 80 were positive. In 1937, surveys of 1774 school-children in Montreal yielded only 2 carriers. The figures for Canadian cities in 1947, ten years later, when they are published, should be conclusive enough to satisfy the most sceptical.[4]

AMINO-ACIDS TO INCREASE PERIPHERAL BLOOD

PROTEINS by virtue of their specific dynamic action are well known to increase heat-production in the body, but there is some doubt whether this increase is accompanied by a rise in the skin temperature of the extremities.[7] The specific dynamic action of proteins mainly depends on the presence of a few amino-acids, particularly glycine, alanine, phenylalanine, and tyrosine. Gubner and his colleagues [8] have given glycine in doses of 20 g. by mouth, dissolved in 200–300 ml. of milk, to 25 subjects, some of whom had peripheral vascular disease. In 18 of these the average maximal rise in oxygen consumption above the basal level was 18·4%, but there was a considerable variation in the individual figures and in 4 subjects there was no significant rise in consumption. Skin temperatures were measured in 11 normal people and in 4 patients with peripheral vascular disease, and the glycine was found to raise the temperature of toes and fingers in 3 out of the 4 patients. The rise was greatest in the toes, and the normals showed a rise of 4°C, compared with 2·3°C in the patients. In 6 cases a posterior tibial nerve block was found to have much the same effect as glycine on skin temperature. Glycine produced a significantly greater rise of skin temperature than the ingestion of alcohol. Oscillometric pulsation in the calf was increased after the ingestion of glycine in 8 out of the 11 normal subjects, but in none of the patients with peripheral vascular disease, even though 2 of the patients had significant rises in skin temperature. Blood-flow to the extremities, as measured by venous occlusion plethysmography, was increased by glycine, the average rise being 62% in 4 normal subjects, and 30·5% in 4 patients with peripheral vascular disease. This increase is the result of peripheral vasodilatation and increased cardiac output.

Much of the early work on peripheral vascular diseases has had to be discarded because of faulty technique, so there is a natural tendency to be cautious in accepting new observations. This investigation, however, seems to have been well controlled, and if it is confirmed it will undoubtedly stimulate others to explore its practical applications.

4. *Lancet*, 1947, i, 668.
5. Dudley, S. F., May, P. M., O'Flynn, J. A. *Spec. Rep. Ser. med. Res. Coun., Lond.* 1934, no. 195.
6. McKinnon, N. E., in Control of Common Fevers, London, 1942, p. 47.
7. Richards, R. L. Peripheral Circulation in Health and Disease, Edinburgh, 1946, p. 35.
8. Gubner, R., Di Palma, J. R., Moore, E. *Amer. J. med. Sci.* 1947, **213**, 46.

RISKS OF LOCAL SULPHONAMIDES

THE Home Office has drawn the attention of trade and other organisations to the Poisons (Amendment) Rules, 1947, which were made by the Secretary of State on Nov. 28. Among other matters these rules allow some relaxation in the restrictions now imposed on the sale of ointments and dressings containing sulphonamides. On and after Jan. 1, 1948, it will be lawful to sell these preparations without a doctor's prescription; but, as the ointments are subject to the provisions of section 18 (2) of the Pharmacy and Poisons Act, 1933, their sale must still be entered in the poisons book and the purchaser's signature obtained.

Most dermatologists will regret this step, for it is they who see the disasters which occur from the injudicious use of sulphonamides when employed for topical therapy. The necessity for obtaining the customer's signature may check sales, but there is a risk that injudicious self-medication will lead to major and minor catastrophes. In his masterly survey of the use of sulphonamides in dermatology Barber [1] expressed doubt whether the use of drugs of this series as local applications in superficial infective dermatoses such as impetigo contagiosa possessed any advantages over rational treatment with older and safer remedies. A similar view was forcibly expressed in the *Army Medical Department Bulletin* [2] in 1943 when sick-wastage from sulphonamide dermatitis was causing much concern. MacKenna [3] has pointed out that local applications of sulphonamides may cause three types of sensitisation—local sensitisation, general sensitisation, and photosensitivity. When local sensitisation occurs, an eczematous reaction with erythema and vesicle formation develops at the site of application; often this is interpreted by the patient as indicating that the original malady is gaining ground, and more vigorous measures may be taken to cure the infection, with disastrous results. General sensitisation is usually accompanied by exacerbation of the local lesions, fever, facial œdema, severe pruritus, and a generalised rash which may be erythematomacular or vesicular or occasionally bullous. Photosensitivity leads to the development of severe sunburn effects on areas of skin exposed to minimal degrees of sunlight, and this photosensitivity may persist for many weeks.

Dermatological literature throughout the world is studded with reports and discussions concerning the hazards of local sulphonamide treatment, but it is agreed that the drugs are used in a large number of cases without ill effect. Hitherto the disasters have been few, though their percentage incidence is not known. Phillips [4] found that among 2430 dermatological patients who passed through the wards of several military hospitals there were 100 cases of sulphonamide dermatitis—an incidence of 4·11%—but we have no knowledge of the size of the population at risk. Manufacturers will no doubt arrange for the preparations sold to the public to be clearly labelled so that the user is warned never to

1. Barber, H. W. *Practitioner*, 1944, **152**, 281.
2. 1943, **29**, 226.
3. MacKenna, R. M. B. *Med. Ann.* 1945, p. 307.
4. Phillips, B. *Brit. J. Derm.* 1946, **58**, 213.

apply the remedy for longer than seven to ten days, for sensitisation seldom develops if this rule is obeyed when local treatment with sulphonamides is first adopted. It will be interesting to see how they overcome the hazard of sensitisation from repeated applications of the remedies for short periods at irregular intervals. Meanwhile doctors in general practice should bear in mind the possible dangers.

THE PRACTITIONER'S INCOME

IN spite of (or maybe because of) the wealth of alternative calculations offered in the Minister's reply, many general practitioners have found a new and a puzzling pastime in figuring out what their individual incomes would be. The results, like those of other Christmas games, have depended a good deal on the psychological make-up of the participants. For a general practitioner in a mixed panel and private practice it may in fact be very difficult to determine just what his prospects are. It is of course easy to take the global sum of £40,826,250, which is to be paid for the general-practitioner service, and divide it by the likely number of practitioners (Mr. Bevan's estimate is 17,900), and so get an average income of £2280. But this is cold comfort. Few doctors will take much interest in this calculation: what they want to know is not the average income but their own expectations, and the truth must remain that there are so many variable factors that no simple formula can be of any real help. All we can do is to consider probabilities.

The first and most stable factor is the doctor's present panel list. Those patients already on this list will automatically remain with him if he joins the service—subject of course to their continued right to change their doctor whenever they choose. The patients on the panel list, if any, provide a firm and calculable nucleus, and one may confidently add to them their dependants. It is usually held that on the average the ratio of dependants to panel patients is 1·2 to 1. So for every 100 patients on his present list the doctor might reasonably count on some 220 in the future. After this, exactitude can hardly be pursued; for, except in closed communities served only by a single doctor or partnership, it is virtually impossible for any doctor to say with confidence at any given moment just how many private patients he cares for. Ledgers help very little. They seldom show the size of families, or keep a tally changing as some members of the family reach insurable age and others are born or die. In urban practice it is not always easy to know whether a particular family, not seen over a long period, is enjoying exceptionally good health or has transferred allegiance to another doctor. Again, few can be sure what proportion of the residents in their area will use the new service; which makes it difficult to guess the likely number of capitation fees, and even harder to estimate how much income may still accrue from private practice. Nor do we yet know how many doctors will be allowed to augment their incomes (and to what extent) by taking part in the maternity service.

On expenses some saving may be expected. The doctor will still (pending health centres) have to maintain his own surgery and his paid (and unpaid) staff, his car, his telephones, and his correspondence; but there should be a considerable saving for drugs, and dispensing, accountancy should cost less, and bad debts and the "free list" should disappear. The sources of occasional, or regular, additional income now enjoyed by general practitioners (such as insurance examinations, factory or other part-time appointments, pensions or recruiting boards) will not run dry, and some new springs are likely to appear; for the Minister speaks of "allowances for training assistants," and it seems certain, too, that in some areas graded specialist service in hospitals or clinics (paid on a sessional basis) will fall to the lot of those practitioners who are recognised by their colleagues as acceptable for this work. Add to this the hidden asset of superannuation rights, and the range of remuneration seems, as we said last week, reasonable though not lavish. It is true that the cost of living has risen steeply; but it will be recalled that Prof. Bradford Hill calculated for the Spens Committee that the gross income *from all sources* of general practitioners in 1939 was in the neighbourhood of £28,285,000. He assumed a similar total of practitioners to that now estimated by the Minister; so we can justifiably contrast his global figure with that now offered by the Treasury. The £40,826,250 offered does therefore represent a substantial increase, particularly when one remembers that in addition to it the gross total future income of doctors will include private fees for general practice; the remuneration received from industry, insurance societies, the hospital boards, and the Ministries of War, Pensions, Education, &c.; the fees received for public and private maternity work; the allowances for training assistants; and the State's share of the superannuation contribution.

Just how it will all work out remains to be seen. Inequalities of opportunity in the early days seem inevitable, though they need not amount to injustice if the time remaining before the appointed day is wisely used. In any service paid preponderantly by capitation fee it seems obvious that opportunity should be provided, well before the commencement of operation of the service, both for the doctors to express their willingness to serve, and for patients hitherto uninsured to state their intention of using the service and their choice of doctor. Any curtailing of this preliminary preparatory period, which should last at least three months, would mean that an inordinately large share of the pool would go to those doctors fortunate enough to have already a very large panel, or skilful enough to be able to collect quickly the maximum of signatures of their newly arriving State patients. Once we recognise this, and are agreed on the undesirability of any unfair and undignified last-minute scramble, it becomes obvious that the time for decision is short—probably no more than half of the six months that separate us from July 5. It is later than we think. It is all the more urgent, therefore, for practitioners to relate the Minister's proposals to their own practices and lives, and to decide whether his offer is one which they can accept.

B.M.A. AND PLEBISCITE

ON Dec. 17 the council of the British Medical Association met to consider the Minister's reply to the Negotiating Committee. In a statement to the press it says:

"... for nearly a year we have worked at the conference table to no purpose. There remains one final question and one central issue. Does the service as described by the Minister conflict with the traditions and standards of a great profession? There is only one answer the council of the association can give to this question. It does so conflict."

On Jan. 31 a plebiscite of the whole profession will be taken.

THE gift of over £1 million which South Africa made last year to the British people included £196,625 from Durban and Natal. Of this sum £106,888 is to go to the Institute of Child Health of the University of London, for a new separate building near Great Ormond Street Hospital. This will house a model welfare clinic and other services developed with the local authority. The institute's director is Prof. Alan Moncrieff.

Special Articles

MASS RADIOGRAPHY IN THE EARLY DIAGNOSIS OF CHEST DISEASE

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THE early diagnosis of pulmonary tuberculosis and other important chest diseases still leaves much to be desired. Routine mass radiography of certain groups of the population was recommended by the Medical Research Council (1942) to detect unsuspected cases in the early asymptomatic stage. An ambitious programme was initiated during the war by the then Minister of Health, and the results of three surveys made by the Medical Research Council (1945) gave impetus to the scheme, which has since gained the enthusiastic support of many able and experienced workers in the field, particularly those who have witnessed the spectacular success of mass radiography in the Armed Forces.

Mass-radiography surveys of the civilian population, however, are a vastly different proposition from the screening or sifting of military personnel under Service conditions. Brailsford (1943) was one of the first to cast doubt on the wisdom and practicability of the official scheme; and Toussaint and Pritchard (1945) developed instead, with outstanding success, what has since been known as the Bermondsey scheme, in which practitioners are encouraged to send all their suspicious cases for X-ray examination.

It is perfectly true that "one type of case will be detected only by mass radiography: the person with unsuspected, possibly infective, chronic disease whose symptoms are insufficient to take him to a doctor" (Medical Research Council 1945). Active tuberculosis, however, has been found in only 0·4% of all the cases so far examined by mass radiography, and not nearly all of these have been symptom-free. Though Kahan and Close (1944) report that in none of their 138 cases of pulmonary tuberculosis picked up in a mass survey of naval ratings had the men ever reported sick or had symptoms such as to cause them to seek medical advice, in the surveys of the Medical Research Council (1945) of 79 "treatment cases" (out of 21,280 persons radiographed) only 29 were symptomless, and of the 50 patients with symptoms, 17 had already consulted a doctor. In other words, in rather more than a fifth of the "unsuspected" cases the patients had had symptoms for which they had sought medical advice, but in all of them the diagnosis had been missed because radiography was not used in time.

No information is given about the incidence of symptoms of non-tuberculous chest diseases found by mass radiography. The incidence of chest abnormalities other than tuberculosis discovered by mass radiography is 1–1·3%, but only a small proportion of these conditions, which include cervical ribs, pleural thickening, and calcified glands, need treatment. There will hardly be many asymptomatic cases of bronchial carcinoma, bronchiectasis, pneumoconiosis, or cardiovascular diseases which show definite radiological abnormalities.

The facts (1) that only by mass radiography can pulmonary tuberculosis and certain other chest abnormalities be detected in the presymptomatic stage (which is not necessarily an early stage); (2) that even the presence of certain symptoms, such as cough or lassitude, often does not lead the patient to the doctor; and (3) that in spite of definite radiological appearances physical signs are sometimes absent and tubercle bacilli not found in the sputum, have wrongly led to the conclusion that mass radiography is the method of choice in diagnosing early cases for treatment and thus in preventing the spread of pulmonary tuberculosis. It was hoped that nation-wide periodical mass radiography would soon become a reality, and the method was regarded as the answer to the question of diagnosis.

THE CLINICAL ASPECT

The clinician, be he tuberculosis officer or sanatorium physician, who has to deal with the cases as they arise sees the grave problem of early diagnosis of chest diseases from a somewhat different aspect. The impression gained in dispensary and sanatorium work has not borne out the claims made by the supporters of the official scheme. I have previously drawn attention to the fallacies inherent in the scheme and suggested more practical and economical ways of using mass-radiography units (Hoffstaedt 1944). I review here the histories of 40 out of 145 adult male inmates of Holywood Hall Sanatorium, co. Durham. In the table these 40 cases are divided into two groups—23 patients who had undergone mass radiography before admission to the sanatorium; and 20 cases where the diagnosis of pulmonary tuberculosis had been missed or had been established much too late because radiography had not been used early enough. Group II contains 3 cases which appear also in group I.

DIAGNOSTIC HISTORY OF 40 PATIENTS

I—23 *cases examined once or more by mass radiography*

A.	Inactive clinically insignificant lesions	3	10
	Pulmonary tuberculosis not yet developed at time of examination	7	
B.	Active pulmonary tuberculosis already in advanced stage		7
	Symptomless	2	
	Ex-prisoner-of-war, mass-radiographed on repatriation	1	
	Symptoms for 3 months	1	
	Under medical treatment for 2 years with "bronchitis"	2	
	Misdiagnosed on discharge from Army in spite of suggestive radiogram and rectal fistula	1	
C.	Relatively "early" pick-ups		6
	Total		23

II—*Original diagnosis in* 20 *cases of delayed action*

Pleurodynia	2	Neglect of family history	5
Pleurisy (no action taken)	4	Neglect of history or/and presence of:	
Influenza	4	Pleurisy	3
Bronchitis, cold, catarrh, &c.	6	Hæmoptysis	3
Fibrosis of lung due to asthma-bronchitis in presence of fistula ani	1	Radiography only on request	3
Anxiety neurosis (after 6 months' hospital "observation")	1		
Muscular rheumatism	1		
Bleeding from throat	1		
Total	20		

Group I (A) consists of 10 cases where mass radiography did not help in picking up unsuspected cases of early clinical pulmonary tuberculosis. In 3 of these men there was probably no active pulmonary tuberculosis when they were radiographed. Tubercle bacilli were never found in their sputum, and after three months' sanatorium observation, and six months or more after detection of the X-ray shadow, there was no spread or activation of the supposed lesion. These 3 "patients" represent the now well-known type of mass-radiography pick-ups who are a headache for the tuberculosis officer and would be at least as well off if never discovered and if left alone. The remaining 7 patients in group I (A) developed pulmonary tuberculosis from five months to more than two years after mass radiography had given a negative result. In their case mass radiography was futile, because the men were well at the time, the only indication for radiography being routine.

Group I (B) consists of 7 cases where active pulmonary tuberculosis was discovered by mass radiography to the

benefit of the patient; but in all of them the disease was already advanced, and mass radiography therefore did not provide early diagnosis. Of these 7 patients 2 had no symptoms, though one of the two had already developed bilateral disease with a cavity and positive sputum. Of the remaining 5 in this group 1, an ex-prisoner-of-war, had far-advanced tuberculosis when he underwent mass radiography on repatriation; 1 had had symptoms for three months when examined; and the remaining 3 were cases of "missed diagnosis" which should really have been found out without being left to chance discovery by mass radiography. These 3 cases are discussed below.

Group I (C) consists of 6 cases where a relatively early diagnosis of pulmonary tuberculosis was established by mass radiography.

Group II consists of 20 cases where the diagnosis of pulmonary tuberculosis had been missed, leading to delay in treatment; they include 3 cases from Group I (B). Among the original diagnoses "pleurodynia" figures twice; this is no diagnosis but merely a symptom.

In 4 cases the patients were treated for "influenza"; it would be grossly unfair to blame any doctor for such a diagnostic error, particularly during seasonal outbreaks of genuine influenza; but the subsequent history and, if present, a family history of pulmonary tuberculosis should arouse suspicion and lead to investigation of sputum and by radiography.

Bronchitis, catarrh, cough, and cold were the original diagnoses in 6 cases. One of the worst had been treated for "smoker's catarrh" by an Army doctor. Two of these patients, who were eventually discovered by mass radiography, had attended their doctor on and off for two years.

In 4 cases even the original diagnosis of pleurisy did not lead to further action until after most valuable time, from six months to two years, had been lost. To diagnose a pleurisy and to leave it at that without further radiography is a very serious omission.

One patient had been discharged from the Army in 1943, after six months' "observation" without ever having been radiographed, with the diagnosis of anxiety neurosis and nervous disability. When he was eventually radiographed three years later, widespread bilateral pulmonary tuberculosis with a big cavity had developed.

Another ex-Army patient had had an ischiorectal fistula since 1941 and had been discharged from the Army in 1942 with the diagnosis of lung fibrosis due to asthma-bronchitis, based on the radiogram without any regard to the presence of the fistula. In February, 1946, hæmoptysis, huskiness, and listlessness had developed. No tubercle bacilli being found in the sputum, no further action had been taken. (This shows clearly the fallacy and actual danger of negative sputum results.) In April, 1946, he had been mass-radiographed; but no report had been received. Only after inquiry in June, 1946, had he been referred to a dispensary, where tubercle bacilli had been found in his sputum, and tuberculous lesions in the upper and middle zones of the left lung.

One patient, in spite of a history of pleurisy in 1944, had been treated for six months in 1945 for muscular rheumatism until a hæmoptysis led to the diagnosis of pulmonary tuberculosis. It is strange that his family doctor had apparently not taken into consideration the highly suspicious and significant fact that both the mother and the sister of the patient had died of pulmonary tuberculosis.

Failure to take the family history into account was significant in 4 other cases. One case had been diagnosed as "bleeding from the throat." The history or the presence of hæmoptysis had been neglected in 3 cases. The omission of chest radiography in a case of hæmoptysis, however small, must be considered grave neglect. Though there are several non-tuberculous conditions which may cause a hæmoptysis, the spitting or coughing up of blood, however little, usually spells serious disease.

Finally one rather exceptional case of "missed diagnosis" is worth mentioning. A miner, aged 22, whose two sisters had died of pulmonary tuberculosis, had had pleurisy in August, 1945, and pleurisy and hæmoptysis in December, 1945, and June, 1946. After that the patient had insisted on being radiographed, with the result that he was admitted to sanatorium in September, 1946, with extensive tuberculous lesions all over the right lung and the left middle zone.

In 3 cases of this group radiography, which had at once clinched the diagnosis, had only been done on either the patient's or his mother's request.

In these 20 cases there was a time-lag, from three months to three years, between first reporting to the doctor and the establishing of the diagnosis by radiography. In most cases the delay exceeded six months.

DISCUSSION OF RESULTS

If in 20 out of 145 sanatorium patients—i.e., in 14% of the sanatorium population—pulmonary tuberculosis was not diagnosed in time, in spite of suggestive symptoms and/or suggestive history, we have no reason for complacency. If, on the other hand, the expensive machinery of mass radiography used in 23 cases was a complete waste in 10 of them, and if only 6 of the 13 pick-ups were early cases whereas 3 cases had been previously missed in spite of suspicious symptoms because they had not been radiographed in time, then there seems to be room for improvement in the use and organisation of radiography as an aid to early diagnosis of chest disease.

It is perhaps fair to assume that the experience in this sanatorium, as illustrated by the analysis of the present 40 cases, is similar to that of other clinicians; and what is true of pulmonary tuberculosis will most probably be true of other chest diseases. Mann (1943) found an average delay of $3^3/_4$ months from onset of suggestive symptoms till the patient consulted the doctor, and a nearly equal delay from the first attendance until reference to the dispensary. For obvious psychological reasons general practitioners are sometimes reluctant on mere suspicion to send a patient to a tuberculosis dispensary. Some patients refuse to attend a tuberculosis clinic for fear of publicity.

As regards early diagnosis, Fraenkel (1947) found, in five years' sanatorium admissions, only 2 cases of the earliest recognisable form of post-primary pulmonary tuberculosis. The failure in practice to diagnose tuberculosis at a reasonably early stage cannot be more impressively demonstrated than by the most alarming and disquieting statement that about half of all deaths from pulmonary tuberculosis take place within a year of notification. What, then, are the reasons for this sorry state of affairs, and what is the remedy?

CAUSES OF DELAY IN DIAGNOSIS

(1) As Jessel (1941) and Trail (1942) point out, there are reasons inherent in lung disease. The onset of the disease—e.g., pulmonary tuberculosis, pneumoconiosis, bronchial carcinoma—is usually so insidious that the patient does not seek medical advice in the early stage. It is this initial paucity, or even absence, of symptoms that forms one of the strong points in favour of routine mass radiography.

(2) Varied and deeply rooted psychological reasons on the part of the patient which have not yet been appreciated sufficiently and must be properly understood: ignorance, indolence, carelessness, and ill-developed sense of health responsibility, on the one hand, and inability to face and to accept a serious disabling disease, fear of insecurity due to loss of work, and other sources of anxiety, on the other hand, prevent many a patient from appreciating such symptoms as may be, and very often are, present.

(3) The well-established fact that chest disease of considerable extent may often present to the examining physician only inconclusive physical signs or no signs at all do not yet command due attention.

(4) The insignificance of negative sputum results, particularly of one single direct smear, both for the diagnosis of pulmonary tuberculosis and for differential diagnosis, does not seem to be common knowledge. In fact "routine sputum examination," as suggested by Brailsford (1944), would do more harm than good if any reliance were to be placed on negative returns.

(5) Let us be frank about another psychological phenomenon. There is undoubtedly also a certain, mostly unconscious, reluctance among doctors to accept and to pronounce so serious a verdict as pulmonary tuberculosis or carcinoma. And from this very reason, though few will be prepared to admit it, any negative findings on either physical or bacteriological examination will be accepted with a sigh of relief; and, hoping for the best, the doctor dismisses his original suspicion much to the detriment of the patient.

(6) Another unpalatable fact has to be faced: doctors are not always so tuberculosis-minded as they should be. This is due to the inadequate training of medical students in tuberculosis, a deficiency of the curriculum which has already been acknowledged by various authorities.

(7) Harassed and overburdened general practitioners have not always an opportunity to take detailed case-histories of patients with minor symptoms—and it is usually with minor complaints that the trouble starts—who want a bottle of medicine rather than being questioned, stripped and tapped, and sent from one place to another, and all the rest of it.

(8) The most important factor leading to missed diagnosis and to serious delay in diagnosis and treatment is the omission of chest radiography as part and parcel of a routine chest examination—the failure to grasp that "examination of the chest is incomplete unless it includes a roentgenographic study" (Goorwitch 1944). One of the main factors contributing to this fateful omission is the lack of sufficient facilities for radiography available to the general practitioner and within easy reach of the patients, particularly in small towns and rural districts. Moreover in many areas tuberculosis dispensaries are not equipped with an X-ray plant, which means many journeys and fares and great loss of time for the patient. It must also be remembered that there are patients who dislike attending a tuberculosis clinic.

IMPRACTICABILITY OF NATION-WIDE ROUTINE MASS RADIOGRAPHY

The supporters of the official mass-radiography scheme believe, and want to make us believe, that faithful application of the official medicine is the real thing. I wonder whether these enthusiasts still believe, as they did five years ago, that "the X-ray manufacturers will shortly be ready to provide apparatus as soon as they receive orders" (*Tubercle* 1942). How are they going to turn out the teams of skilled personnel, technical and medical, to man the units which apparently were to come off the endless belt like cannon shells in munition factories? The bitter truth is that up to the end of June, 1946, only 19 units altogether were operating in England and Wales (*Lancet* 1946), which to that date had examined 1,111,000 people with the rather meagre result of picking up 4200 cases (0·4%) of active pulmonary tuberculosis. Even supposing it were possible to provide another 19 or 20 units together with skilled personnel within the next three years or so, we should still not have made much headway on the road to Utopia.

Toussaint and Pritchard (1943) said that "to deal with even 50% of the London population 20 units will be required," and Brailsford (1943) estimated that "for the Birmingham area of 2,000,000 inhabitants we should need 80 units for 3-monthly examinations." Even if Brailsford's figures are cut by half, it is obvious that, with the machines and the personnel now at our disposal, it will be impossible for many years to come to survey the working population of this country even once, let alone periodically every six months.

Apart from the futility of the scheme, the expenses in material and working hours, the amount of energy and skill employed, are utterly out of proportion to the poor return—an average of 0·4% of active pulmonary tuberculosis and a very small percentage of other chest diseases, a good deal of which could and should be discovered by ordinary routine examination under an adequate and up-to-date diagnostic service.

A wave of positive criticism against the official scheme is rising. Heaf (1946) and Jessel (1945) state frankly the impracticability of surveys of a whole population. Jessel (1945) and Hoyle (1945) emphasise the potential danger of one normal radiological report in creating a sense of security which may delay diagnosis later. I have already drawn attention to this point (Hoffstaedt 1944). Hoyle concludes: "We have yet to learn how best it may be used and what the unavoidable limitations are of a method capable at once of revealing pulmonary tuberculosis at its most amenable phase and yet of failing to do so in practice, except for a fortunate few who happen to be in this phase at the precise moment of the examination."

Brailsford (1945) lucidly demonstrates the limitations of mass radiography and suggests the use of this method for limited, selected, and essential services. He, like England (1946), sees the danger of straining the dispensary system by overflooding it with insignificant cases to the detriment of those in need of attention and treatment. England's main criticism deals with the 25–50% leakage of the "drag-net" resulting from the voluntary character of the scheme, because it is the very fraction of the population most likely to show a high incidence of disease which will most probably escape the wide mesh of the net.

The wastefulness of routine mass radiography, if it ever attains its object of periodical surveys of stable population groups, is shown by Reid's (1943) revelation that the incidence of new cases of active pulmonary tuberculosis among the employees of the Metropolitan Life Insurance Co. dropped in ten years from 0·4% to 0·07%. This observation is supported by the report of the Medical Research Council (1945) that the incidence of newly discovered cases of active pulmonary tuberculosis dropped from 0·3% to 0·1% in a year when the same group was re-examined.

THE REMEDY

The diagnosis of disease is in the first instance the business of the family doctor. The general practitioner is not only just a clearing-station, but far more—the first line of defence. Before the practitioner can play his most important part in any health service which deserves the attribute "comprehensive and efficient," several basic conditions must be fulfilled.

The first essential condition is that "for diagnosis, doctor and patient must meet" (Trail 1942). As this cannot be taken for granted, something has to be done about it. It has been shown over and over again that too much time is lost before the patient sees the doctor (Mann 1943, 1946). Health education on a nation-wide scale, starting at school, must create and foster a sense of health responsibility, and at the same time the masses must be educated to look after themselves and to seek proper medical advice (not a bottle of medicine or pink tablets) in time. The modern tendency to spoon-feed the people weakens and eventually destroys the sense of self-responsibility and of independence which is the very essence of civic liberty. A wrong notion of what is meant by "guaranteed security" makes the people too much dependent on some sort of State assistance or public services which will take all the trouble and will

readily come in whenever required—though then often too late.

It therefore seems that, except for certain hazardous industries where routine mass-radiography surveys are essential, it is a psychologically wrong approach, and not without danger, to bring the X-ray machine to the factory and to the office. The better plan would be to see that the really deserving people, the suspected cases, are sent to the X-ray department through the agency of their own doctor.

The widespread indolence and complacency of so many irresponsible and ignorant people must gradually but systematically be overcome. The raising of the school-leaving age is perhaps a unique opportunity for health education. The cinema should produce an equivalent to the B.B.C. talks of the Radio Doctor. There is plenty of scope for effective health propaganda. To maintain the proper doctor-patient relationship, which is the foundation of any satisfactory health service, people must be encouraged to see first of all their own doctor.

It is certainly commendable that mass-radiography units direct their activities towards people in whom the presence of a chest disease may be suspected; but it is definitely wrong for them to organise so-called open sessions and invite the public, by advertisements in local papers and transport, to attend these sessions. This is contrary to professional usage and does not fit in with the generally accepted practice of outpatient clinics and public-health clinics.

It is the general practitioner that must be encouraged, nay urged, to send patients for radiography. In the National Health Service the health centres, as they gradually come into being, will provide facilities for radiography. It is here that mobile mass-radiography units could be employed with the greatest benefit to the public (Hoffstaedt 1947). Adequately equipped health centres for group practice, taking the place of the often poorly equipped one-man shop called the surgery, will eventually give the practitioner the chance of examining patients properly. Here also basic laboratory facilities must be provided. Last but not least, the help of a trained nurse or of a receptionist will enable the practitioner to take proper case-histories, preferably on standard case-sheets with relevant anamnestic and symptomatic items, including family and occupational history. After all, history-taking is one of the most important and revealing parts of an adequate examination.

A much better training of the medical student in tuberculosis and chest diseases and in the appraisal of X-ray photographs is an urgent necessity. It must be understood by doctors that arguments about stethoscope versus X rays are pointless, because physical chest examination and radiography are not alternative but complementary methods, each of them indispensable and essential, supplementing, never substituting, each other. Maxwell (1946) rightly postulates: "A practitioner who did not insist on an X-ray examination of a suspicious chest case, especially after hæmoptysis, might be sued for negligence." And Toussaint and Pritchard (1944) logically visualise the same legal consequences for omission of a chest radiogram as those already existing under the present law for neglect to radiograph a bone injury in time. Even "the man in the street is coming to know that a chest examination without a film is of comparatively little value" (Tattersall 1946).

THE PLACE OF ROUTINE MASS RADIOGRAPHY

In existing circumstances the pursuance of the official scheme of indiscriminate routine mass radiography is utopian. The Medical Research Council (1942) rightly said that "owing to the limitation of apparatus likely to be available in this country concentration at the present time should be upon those groups where through the nature of employment (e.g., silicosis producing industries) or the composition of the population at risk a relatively high incidence of unsuspected pulmonary tuberculosis is likely to be found." Dick (1946), also recognising the continuing scarcity of machinery, allocates at least one afternoon each week to the examination of contacts and referred cases. Heaf (1946) and Brailsford (1944) recommend the use of the available units for those sections of the population where there is the highest risk: hazardous industries, contacts, and suspicious cases with symptoms. In hazardous industries mass radiography should also be used for pre-employment examination (Gooding 1946, Heaf 1946).

Routine periodical mass radiography of contacts would greatly contribute to the early diagnosis of pulmonary tuberculosis and at the same time help greatly the routine work of the chest clinics or dispensaries (Hoffstaedt 1944, England 1946). That the examination of contacts by mass radiography deserves first priority is clearly shown by the results published by Dick and Thompson (1946), who found the incidence of active pulmonary tuberculosis among contacts five times as high as in the general population; by Hahn (1943), who found similar figures among consorts of persons with pulmonary tuberculosis; and by Couts (1947), who found an incidence of 5·5% and 6·3% respectively among contacts examined in 1944 and 1945.

In short, it is the suspected rather than the unsuspected section of the population on which we have to concentrate our efforts to make radiography the most powerful weapon in our fight against the white plague.

SUMMARY

Of 23 adult male sanatorium patients who had been examined in the course of routine mass radiography, this procedure had been valueless in 10. Of the other 13, only 6 were diagnosed in an early stage.

Another group of 20 cases illustrates the need for much better training of medical students in tuberculosis and chest radiography.

The impracticability and undesirability of nation-wide routine periodical mass radiography are shown.

It is suggested that mobile mass-radiography units should be employed at health centres and should concentrate their attention on workers in hazardous industries, on contacts of known patients, and on suspicious cases with symptoms—i.e., the suspected rather than the unsuspected section of the population.

My thanks are due to Dr. J. W. Gray, medical superintendent, Holywood Hall Sanatorium, for permission to publish and for his kind and helpful advice.

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LOCAL EXECUTIVE COUNCILS

WE publish this week a further list of the chairmen and medical members of these councils. A council has still to be set up for the Scilly Isles. Earlier lists appeared in our issues of Sept. 6 (p. 364) and Sept. 27 (p. 485).

Anglesey

Colonel R. D. Briercliffe (chairman); Drs. T. A. Griffiths, Leslie Jones, R. O. Jones, J. Lloyd Lewis, W. Parry-Jones, N. B. Thomas, G. P. Williams.

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Surrey

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Wakefield

Alderman A. Carr (chairman); Drs. C. S. Broadbent, A. M. R. Heron, H. T. Knowles, P. J. Rafferty, J. J. Reynolds, S. P. Sloan, T. Walker.

Medicine and the Law

In the Wrong Carton

LAST week the Hammersmith coroner considered the case of a man of 42 who died suddenly after an injection for varicose veins.[1] The doctor who had been treating him said that the patient had previously had two injections. When he returned for a third injection the doctor drew off 2 ml. of 'Etalate' from an almost empty bottle. In order to make up the amount to 5 ml. he then took down from his cabinet a second bottle in a container labelled 'Etalate,' and withdrew from it a further 3 ml. In so doing, he saw only the rubber cap of the bottle, which remained in the container. The 5 ml. of fluid thus obtained was injected into the thigh of the patient, who collapsed and died two minutes later. Afterwards the doctor found that the second bottle contained adrenaline solution, not etalate. A fortnight earlier he had mislaid a bottle of adrenaline which he usually carried in his bag, and despite search it had not been found. Workmen were decorating his ground-floor room, and on the night before he saw the patient he had moved most of his equipment into a room on the first floor, where the injection was given. He concluded that the lost bottle of adrenaline must have found its way into the etalate carton.

A verdict of death by misadventure was returned.

1. *Evening Standard*, Dec. 15.

In England Now

A Running Commentary by Peripatetic Correspondents

As soon as Siva appears on the scene, at the Indian Exhibition,[1] stone and bronze begin to dance; they can hardly do less, for he is the Lord of the Dance, the emblem of cosmic rhythm. Symbolic additional arms, weaving into the light-hearted pattern, astound the unaccustomed eye only for a moment; and gods and godlings crowd together, supple as van Gogh's fir tree, until every group seems rustling with movement, or rushing up in flame. How strangely quiet, after this, are the rooms of little brilliant pictures, where flowers enamel the ground and a blue Krishna sports with the milkmaids. They are as bright and vivid as pictures in a missal—

> . . . "Where all is smaller than a wren,
> But has high towers, meteors, and men,
> And suns and spouting whales."

Whales, indeed, are not to be seen, but there are fawns and hounds and horses, and a Persian richness of flowers and trees and shining silks.

* * *

An exhumation I attended a few weeks ago was almost a jolly occasion. Our proceedings started with an excellent cup of coffee and a welcoming smile from a Sister of Charity dressed in flowing black except for her white wimple and a large dangling wooden rosary at her waist. Two of my colleagues were also present—the local medical officer of health, bearing a Home Office exhumation order, and a physician from a neighbouring town, who, like myself, had consented to act as an official medical witness. The morning sun shone into the anteroom while we speculated quietly about our part in the coming ceremony, which had just begun with the chanting of the *Veni Creator* in the adjacent chapel.

Fifty years ago the foundress of the Order, after a saintly life, had died and been interred in a lead coffin in a deep vault beneath the wooden floor of the little church. Convinced of her outstanding sanctity, the community had applied to the Holy See for official inquiries to be made, hoping that these would lead to her beatification. I don't know much about the details except that these inquiries are thorough beyond belief.

First you dig up the body. This had just been done by a small group of blue-overalled workmen, who had torn up the floor, opened the vault, and raised a grimy leaden shell up to floor level and left it by the side of the hole. Seated on a chair in the middle of the little nave was the Reverend Abbot of an adjacent monastery with three or four monks in Benedictine habits, one of whom was the postulator, pressing the cause and acting as master of ceremonies for the occasion. Along one side of the chapel sat a line of nuns of the Order, all Reverend Mothers of branches of the community, some of whom had come half-way across the world to be present. We were given seats opposite the sisters, about three feet from the coffin, around which stood the six workmen. A long trestle table with a heap of rosaries and sacred emblems at one end took up much of the space, and in the background the good nuns had thoughtfully provided several hand basins, hot water, and a large bottle of 'Dettol.'

The Abbot rose and held up a document from the ecclesiastical authorities, the large stone of his finger ring making a touch of colour against the sombre black of his companions. The paper was read, authorising the exhumation and examination of the body, provided that no other bodies were disturbed and that all the process should conform with the laws of the civil authority. Here he turned to the M.O.H. and asked if all was in order to proceed. Receiving an affirmative answer Holy Church got down to serious business. One by one, with their right hands touching a large copy of the Gospels placed in the foreground, the small group of priests bound themselves by a formidable and comprehensive oath to give nothing but true and honest testimony of all that should be seen or found. Then two sisters from the end of the line came forward to be sworn and questioned by the Abbot. They agreed that they had witnessed the interment and that to the best of their knowledge the body had lain there undisturbed for fifty years. Then the chaplain pronounced the solemn curse of excommunication on any person who should, from whatever pious motive, disturb, add to, or remove anything from the coffin about to be opened. Lastly every one of the workmen and we ourselves were sworn in like manner. By this time I felt rather like the Jackdaw of Rheims; and we all know what happened to him.

The foreman of the attendants began work on the shell, introducing the point of a clasp knife into the edge of the lead lid and gently tapping the blade along the whole length of the side to work his way round to the starting-point. He was followed by two of his mates with screwdrivers who gently levered up the small nails securing the lead edges to the wood. The air of expectancy throughout the assembly could almost be felt.

The Roman Catholic Church is not easily persuaded to make new Saints, and first demands overwhelming evidence of their sanctity. I believe that among other things at least two major miracles connected with the Saint must be cited, and the evidence must be faultless and convincing. Later a very sceptical gentleman is briefed as Devil's Advocate and instructed to tear the evidence to shreds. Complete absence of corruption many years after death (embalming and the like being excluded) is a good start, and no doubt many hopeful hearts awaited something of the kind here. It has apparently occurred a good many times in the past. Still we, as doctors and medical sceptics (not to mention our oaths), had no intention of being deceived in any matters to come.

At last the outer lid was prized up and the inner wooden shell revealed with a damp white mould streaking its outer surface. The workmen gently lifted the heavy lid and laid it aside while the foreman easily levered up the light covering of the inner shell lying in a set of grooves. As witnesses we then rose to examine the contents.

Clothed in her black habit and scapular, a small body lay supine, the hands clasping a rosary and a withered spray of flowers, with a faded piece of paper, almost completely decomposed but bearing the faint handwriting of her solemn vows made a hundred years before, between her fingers. From some fault in sealing at the time of burial the coffin was not entirely airtight, and we found the body and outer clothes sodden with moisture. The lining of the shell, the outer clothing, and even the black felt slippers were intact, but the stockings and body covering had almost entirely rotted away. As a whole the body and limbs had retained their normal shape, but the tissues covered by clothes had become converted into adipocere of a white and almost granular consistency. The uncovered face and hands were shrunken and mummified to a brown colour, with the features unrecognisable but the finger-nails intact, though they became detached at a gentle touch.

The quiet voice of the postulator adjured us to make as thorough an examination as possible and to give an exact account of the condition of the body and all the limbs. I called to two of the sisters to free the heavy leather girdle and expose the rest of the body so that I could examine it while my physician colleague took notes. Then we adjourned to the trestle table to wash our hands. A nun found us a typewriter and carbon papers, and my colleague and I composed a joint report under the scrutiny of the M.O.H.

Meanwhile, the long file of nuns passed round the shell to take a last look at their foundress and to touch the exposed body with rosaries and crucifixes. The Abbot and his attendant clergy sat and watched the opened coffin till, after a formal question as to whether we wished to make any further examination, the order was given to reseal the leaden lid. We read, checked, and signed four copies of our detailed report and handed them to the postulator, who thanked us heartily for our help and then casually asked us if we had noticed anything unusual about the body, having regard to all the circumstances. We could only find him one sentence in our report which said: "There was a remarkable absence of odour when the coffin lid was raised." And

1. The "Exhibition of Art, chiefly from the Dominions of India and Pakistan" at the Royal Academy of Arts is open until Feb. 29, 1948; weekdays 10 A.M. to 7 P.M., Sundays 2–7 P.M.

that, with the body a mass of adipocere, dripping wet clothes, and obvious access to moulds, we both thought at least slightly unusual.

* * *

It was somewhat of a shock, though a pleasant one, to change from our austere British food to the full, nay surplus, diet of America. At first I ate freely and put on 7 lb., but I soon found that I had to limit my intake if I wished to feel at my best. One's constitution undoubtedly accommodates itself to austerity.

Two points about the meals struck me as noteworthy—the constant presence of iced water and the usual absence of wine at table. The glass of iced water is served to each guest at every meal—breakfast, lunch, tea, dinner—before anything else is brought. After a time one gets to like it, though it does seem out of place when brought with a pot of hot tea. Once when I asked my hostess why it was always served she answered, "Well, we should not consider the table properly laid unless each person had it." Whether it is a good or bad thing for the stomach is not for me to say; an experienced physician thought it was harmful, but this may have been a case of sour grapes. It is the custom to drink cocktails—definitely in the plural—before the meal; but as a rule water, iced of course, was the only drink during the meal. Since I happen to be a teetotaller this was quite convenient.

* * *

Once upon a time, as you will remember, there was a princess who had stepmother trouble. Her eleven brothers were turned into swans and she got carried off and married to a king. She used to leave his bed (it says that in the book) to collect nettles from the churchyard and to weave them into coats of mail, specific cures for those who are swans by day. She was about to be burned as a witch when it all came right, all but the eleventh brother's arm which remained a wing. You remember? Hans Andersen assures us that the diagnosis of being a witch rested on her refusal to speak and her going to the churchyard; but I doubt if he got the case-history right. How was he to know about Feldberg, Anrep, and their colleagues?[1] It is only too obvious now. The woman was pregnant, the nettles planned to do their stuff with acetylcholine, histamine, and something, but she had a high histaminolytic index and so although she felt the pain she didn't get nettle-rash. That's why they thought she was a witch; probably Andersen thought the churchyard story had better sales-value.

It has taken me forty years to make the diagnosis of pregnancy in this case. Is that in time for those who live happily ever after?

* * *

She was one of the cases in which the formidable battery of psycho- and physico-therapies of modern psychiatry had failed. Over the weekend at home she smashed all her crockery and put most of her clothes into the fire. Then somebody remembered that a gynæcologist had suspected gland trouble because of the faun-like hirsutes she had from the belt downwards. The big gun of endocrinology was to come up all the way from London and matron was told to get the patient prepared for examination. After the experts had put their heads together and the gynæcologist had pleaded his case for virilism, we stood around the bed to see the evidence. I wish I could describe his face (and ours) when it was found completely removed, shaved off by our well-trained and zealous matron.

* * *

My peripatetic friend has suggested (Dec. 13) that the surest way to avoid seasickness is to put one eye into retirement. My family has strong Nelsonian traditions, and we have always understood that that great sailor suffered all his life from this distressing disturbance. Does anyone know whether it was less prominent after he lost an eye off Corsica in 1794? But I don't suppose he thought of blocking the contralateral ear, as my colleague recommends. Talking of Nelson, your readers might like to know my personal preference in remedies: I take three grains of phenobarbitone, wrap myself in a blanket, lie down, block both ears, close both eyes, and will the vessel to founder.

1. See *J. Physiol.* Oct. 15.

Letters to the Editor

PATHOLOGY IN THE NATIONAL HEALTH SERVICE

SIR,—Since its foundation twenty-one years ago the Association of Clinical Pathologists has kept a close watch on the development of the nation's service in clinical pathology, and it may claim to have played some part in shaping it. As officers of the association we should like to assure Dr. Coghill, Dr. Spence, and Mr. Stern that there is no project on the part of anyone to organise "hospital pathology separately from the rest of the professional hospital services." Such a step would, as they rightly point out, inevitably divorce clinical medicine from pathology; and it would be directly contrary to the policy of our association which would have offered to it the most vigorous opposition: fortunately we know that no separation of clinical (which includes hospital) pathology from clinical medicine is in contemplation. We are satisfied that the service in clinical pathology will be developed "as an integral part" of the national hospital service, and further that it will be so developed in close consultation with the pathologists concerned.

So far as hospital pathology is concerned Dr. Coghill and his associates are barking up the wrong tree.

S. C. DYKE
Chairman of Council.
W. H. MCMENEMEY
Secretary, Association of Clinical Pathologists.

HYPERTENSION AND HEREDITY

SIR,—Your interesting annotation of Dec. 6 prompts me to add a few historical facts. The conception of hypertension as a hereditary disease is old. Seventy years ago—that is in the decade preceding von Basch's (1887) introduction of his sphygmomanometer into clinical use—Broadbent, and later Huchard,[1] who was the first to differentiate between two distinct types of hypertension which he termed *artérioscléreux blancs* and *artérioscléreux rouges*, mentioned heredity as the most important ætiological factor. J. Pal (1905) in his *Gefässkrisen* considered hypertension as a "family disease." Alvarez[2] and Vaquez and Leconte[3] took the same view, and Volhard who stressed the point in a paper published by his co-worker John (1913) used—as I well remember from the time I was his assistant in the early 'twenties—to teach his students that it is up to the family doctor to fill the gap in our knowledge about the ætiology of essential hypertension.

Genealogical charts can be traced back to 1899, when Pel[4] published a table of four generations with "chronic nephritis"; this was reproduced in Volhard's monograph[5] which contains family trees covering four generations and gives blood-pressure readings for the last two. Statistical data were given by O'Hare, Walker, and Vickers,[6] who examined the family history of 300 cases of hypertension, with a positive history of vascular disease in 68%, and by Wiechmann and Paal,[7] who in 500 cases found such a history in 38%. But these and other statistics based on circumstantial evidence are not conclusive, since cerebral hæmorrhage and coronary thrombosis are not necessarily connected with high blood-pressure.

There is, however, another more conclusive way to prove the constitutional nature of essential hypertension. In an investigation of the prehypertensive age of descendants of patients with essential hypertension, I frequently found[8] in blood-pressure curves recorded at intervals of under 1 minute up to 1 hour the same huge range of oscillations of the systolic blood-pressure which is

1. Huchard, H. Traité clinique des maladies du cœur, Paris, 1899, vol. I, p. 51.
2. Alvarez, W. C. *Arch. intern. Med.* 1920, **26**, 381.
3. Cited by L. Pellissier, L'hypertension artérielle solitaire, Paris, 1927, p. 97.
4. Pel, P. K. *Z. klin. Med.* 1899, **38**, 127.
5. Volhard, F. Mohr-Stähelin's Handbuch inneren Medizin, Berlin, 1931, vol. VI, p. 1637.
6. O'Hare, J. P., Walker, W. G., Vickers, M. C. *J. Amer. med. Ass.* 1924, **83**, 27.
7. Wiechmann, E., Paal, H. *Dtsch. Arch. klin. Med.* 1927, **154**, 287.
8. Hahn, L. *Zbl. inn. Med.* 1924, no. 46, p. 946; *ibid*, 1925, no. 1, p. 1; no. 32, p. 738.

characteristic of the first stage of essential hypertension, then termed by me "chronic intermittent hypertension." These oscillations occur quite independently of the absolute height of the systolic blood-pressure and are present even if symptoms of angioneurosis—the equivalent of essential hypertension in the young—are slight or absent.

Nuneaton. L. HAHN.

TEACHING APPOINTMENTS

SIR,—Dr. Black (Dec. 6) has completely missed the main point of my letter on Nov. 22. I had no desire to belittle the contribution to medicine of laboratory research-workers. The issue is an entirely different one. It is that people who have achieved success as laboratory workers, but who have had extremely little clinical experience, are being given appointments as teachers of clinical medicine. In my opinion—and I am supported by many others—this is wrong, because it is unfair both to clinicians, who have spent years improving their clinical knowledge, and to the great bulk of students.

The position has arisen in large measure from the fact that in the past research-workers were underpaid. With more money, but not enough to employ as teachers both trained clinicians and laboratory research-workers, many of the universities have appointed the latter as more likely to bring fame and honour to the schools; so we may see a university appoint a biochemist as a professor of clinical medicine, and a bacteriologist as the senior lecturer. I feel sure that if that great teacher and clinician, William Osler, were alive and were to apply for the post of senior lecturer in clinical medicine, he would at many schools be turned down in favour of a young fellow who has published some papers on the aluminium content of fluids removed from the nuciform sac.

I am not asking, as Dr. Black suggests, university authorities "to dismiss research ability from their consideration in appointing senior staff." What I am asking is that when they appoint professors and senior lecturers in clinical medicine, clinical experience and ability and an aptitude for teaching, should be the major considerations.

That distinguished teacher and clinician, Dr. F. M. R. Walshe, in his recent address to medical students (*Lancet*, Dec. 6, p. 817), has answered the points raised by Dr. Black. The objects of a teaching hospital are, says Walshe, "to advance knowledge, to train doctors, and to set an example of practice." Further, he points out, clinicians as well as laboratory workers have contributed to this advancement. Doctors cannot "set an example of practice" if they themselves are not good clinicians; and good clinicians are not made in the laboratory. M.R.C.P.

COAGULATION FACTORS

SIR,—I cannot quite agree with Professor Seegers (Nov. 1), who, holding "your leading article on Sept. 13 to be misleading and inaccurate," says: "The account given above records who established these facts."

As I pointed out in my letter earlier this year (June 7), it was Dr. Owren who first proved definitely the existence of at least one more coagulation factor. This factor V, as Owren calls it, is different from prothrombin but absolutely necessary for the conversion of this substance to thrombin by thromboplastin and calcium. This discovery was made in 1943, and a preliminary report of the isolation and properties of the new factor was read before the meeting of the Norwegian Academy of Science in Oslo on Nov. 10, 1944.[1] In this connexion I would recall that Norway at that time was still under German occupation, and that Dr. Owren therefore had no opportunity to publish his findings in an international journal to which other workers in this field had access. Conditions in Norway during and immediately after the war are also to be blamed for the delayed publication of Owren's monograph on the subject, which appeared in 1947.[2] On the other hand, many of the British and American journals were not available in Norway for a long time. Thus, the paper of Professor Quick on prothrombin A and B, published in 1943,[3] did not reach Norway until last year.

What I want to make clear is that the work of Owren has been carried out quite independently, and that it is not, as one might believe on reading Professor Seegers's letter, a mere confirmation of the findings of other investigators. The paper of Fantl and Nance [4] was published at a time when Dr. Owren had given a series of lectures about his factor V in Norway,[5] Denmark,[6] and Sweden[7]; and a few days after its appearance he also lectured in London [8] and Oxford.[9]

The work of Owren brings for the first time into harmony several of the earlier contradictory observations, by showing that the "pure" preparations of coagulation factors used by previous investigators were all contaminated with factor V to a greater or less extent. Factor V is not an accelerator in the strict sense of the word, but a true coagulation factor, for no coagulation takes place (in vitro) in the absence of factor V. Whether factor V itself is able to bring about the transformation of prothrombin into thrombin through the action of thromboplastin and calcium, or whether, as Owren thinks, it first has to be converted into factor VI, which then would be the real coagulation factor, remains an open question. As far as I can see, the prothrombin B of Quick [3] is identical with what Seegers and Owren more correctly call prothrombin, while prothrombin A and the accelerator substance of Fantl and Nance and of Ware, Guest, and Seegers [10] is identical with factor V.

I hope that these remarks may help to remove some of the mist that seems to make it difficult to discover "who established these facts."

Central Laboratory, Aker Municipal Hospital, Oslo, Norway. KARL CLOSS.

BREACH OF CONFIDENCE?

SIR,—I cannot help thinking that the profession is unaware in how many ways breach of medical traditions is occasioned by the procedure adopted by the Ministry of Food in enlisting the support of their so-called "medical advisers" to override medical certificates which medical practitioners are required to send to the Ministry of Food when requesting allowance of special invalid diets. The procedure was described very fully in an important debate (*Hansard*, Jan. 22, 1947), and it was condemned from all parts of the House.

The doctor is required to submit a medical certificate, describing in great detail the character and prognosis of the illness for which concession is asked. Unless the illness fits into a schedule of diseases furnished by the medical advisers as automatically deserving priorities—in which case the concession is automatically made—the Minister of Food's clerks, on their own responsibility, select that one of the medical advisers whom they consider proper to approach in the case. If such a position arises, a bunch of civil servants, with no medical knowledge or experience, presume to sit in judgment upon certificates furnished by registered medical practitioners in actual charge of the patients concerned, and these certificates may be overruled by some unnamed medical practitioner who has had no contact with the patient, who may have had no experience of the specific illness, and who certainly has no knowledge whatever of the individual circumstances of the case.

I submit, Sir, that this procedure involves the negation of well-established rules of professional conduct, some based on immemorial sanctions.

1. A medical certificate, which should enjoy the fullest protection of professional secrecy, is submitted without the authority of the patient to lay inspection, which may in certain circumstances involve publication even more wide than that of the Ministry's clerks. I have before me a letter from a distinguished medical practitioner, who found that

1. Owren, P. A. Aarbok for Det Norske Videnskapsakademi, 1944, p. 21.
2. Owren, P. A. Coagulation of Blood: Investigations on a New Clotting Factor. *Acta med. scand.* 1947, suppl. 194.
3. Quick, A. J. *Amer. J. Physiol.* 1943, **140**, 212.
4. Fantl, P., Nance, M. *Nature, Lond.* 1946, **158**, 708.
5. Meeting of Norw. Acad. Sci., Oslo, Nov. 10, 1944; Norw. Med. Soc., Oslo, June 6, 1945; Med. Physiol. Ass., Oslo, Nov. 1, 1945.
6. Meeting of Jutland Med. Soc., Aarhus, April 28, 1946.
7. Scand. Congr. Int. Med., Gothenburg, June 28, 1946.
8. London Univ., Nov. 22, 1946.
9. Radcliffe Infirmary, Oxford, Nov. 28, 1946.
10. Ware, A. G., Guest, M. M., Seegers, W. H. *J. biol. Chem.* 1947, **169**, 231; *Science*, 1947, **106**, 41.

his certificate, sent to the Minister, in which he had expressed the opinion that the patient would probably die had been communicated to a food office in the district where the practitioner practised, and he learned that certain district nurses were discussing the probability of this patient's death, having obtained this information via the local food office. At the recent session of the General Medical Council the chief medical officer to an Irish insurance company was adjudged "guilty of infamous conduct in a professional respect" for having sought from a registered medical practitioner information regarding his patient, who had not authorised such disclosure. The chairman, in giving judgment, said that the Council "took a very serious view of any action which might impair the patient's trust in the confidential nature of any information obtained by a medical attendant about his patient."

2. The medical advisers, or some of them, are offending against the salutary rule that a medical certificate should not be given without proper medical examination of the patient immediately prior to the issue of the certificate. When the General Medical Council met last month a medical practitioner was severely censured, and narrowly escaped removal of his name from the Register, because he had given certificates which sought out of compassion to prolong for a short time the leave of a serving soldier whose father had been under the practitioner's medical care two or three weeks previously, but not immediately before the certificates were issued. These certificates declared that the father was ill enough to require his son's aid.

3. Modern medicine deprecates a philosophy which regards diseases as entities. The wiser conception is surely that of a sick person who shows symptoms which, for convenience, may be grouped as a syndrome, but exhibiting individual differences which require individual treatment. It is the flouting of such a conception which fosters the wicked racketeering by the patent-medicine trade, with its lists of diseases, each calling for such-and-such a nostrum.

I submit that it is in the highest degree regrettable that the "medical advisers" who enjoy the prestige of membership of the Medical Research Council should lend their support to practices so repugnant to medical science and to medical ethics.

House of Commons. E. GRAHAM-LITTLE.

A SIMPLIFIED ANATOMICAL NOMENCLATURE

SIR,—Some day within the next decade or two the medical course will have to be extended considerably unless the annual growth of the syllabus is curtailed. There is one sphere in which this could be done without loss and even with profit—namely, anatomy. For instance, the index of *Gray's Anatomy* lists about 380 named arteries and a corresponding number of veins. I wish to put forward a scheme for reducing this number considerably while at the same time making it easier to picture the course of a vessel in relation to the whole body.

The adult arterial system consists essentially of a dorsal aorta with a bifurcation at each end. Let us term the two cranial branches *directly* the right and left subclavians, and let us say that they extend down to the elbow, having passed through the axillary fossa and curved round to the front of the arm when the palm is uppermost. At the lower border of the elbow-joint they bifurcate to give us the anterior and posterior subclavian branches, while from the posterior branch just after its origin there arises the anterior interosseous which in turn gives off the posterior interosseous. The anterior subclavian continues down to supply the thumb and by the palmar ramification an anastomosis is formed between anterior and posterior subclavians. That is a comprehensive and easily retained picture; the subclavian arising from the aortic arch and reaching to the finger tips.

Similarly the caudal fork can be dealt with. To correspond as closely as possible with the upper part of the body let us call the single vessel that reaches from the fourth lumbar vertebra to the back of the knee the femoral artery. Then the aorta divides into the right and left femoral arteries from which are given off the right and left iliacs. The femorals pass down through the femoral triangle and run down in an elongated spiral, medially directed, to reach the popliteal fossa at the back of the knee-joint, after which they divide into anterior and posterior branches, the posterior in turn giving off the peroneal. At the foot the posterior branch divides into lateral and medial plantar, ramifying round the toes where an anastomosis is effected with the arcuate ramification of the anterior femoral artery.

Admittedly this is only the barest outline, and an extensive filling-in is needed; but, even so, a person with no special knowledge of anatomy could draw an accurate diagram of the major vessels as the description was read to him. The same treatment can be applied to many of the branch arteries. Why, for instance, complicate the internal iliac by naming its divisions anterior and posterior rami which become the inferior and superior gluteal? Why not call them by the name gluteal at once?

Surely the very naming of an artery "innominate" shows that the nomenclature had defeat within itself, even while developing towards its present complexity.

Trinity College, Dublin. MICHAEL DILLON.

*** Anatomical nomenclature badly needs simplifying, and our correspondent's proposals are attractive. But extending names to cover such long tracts of vessels and nerves would make it difficult to specify particular parts of the tracts. It would also create confusion for comparative anatomists unless it were applied throughout the vertebrate phylum.—ED. L.

DIABETIC ARTHROPATHY

SIR,—In his letter of Nov. 15 Dr. Shore described a Charcot knee-joint in a diabetic. Several similar cases have recently been reported, but in most of these the ankle-joint was affected. Rundles [1] describes one case with extensive disruption of the tarsometatarsal joint, with loss of joint surfaces and many loose bodies. Fourteen diabetic cases seen at the New England Deaconess Hospital had suffered painless destruction of joints of the tarsus during the previous few years [2]; and Jordan [3] gives details of a woman with diabetes of 14 years' duration who developed a typical painless Charcot joint of the ankle, in addition to chronic osteomyelitis of the foot of an unusual type and without obvious ætiology. Later he [4] reported two further cases of diabetes—one with a neuropathic ankle-joint, and the other with changes in the lumbar vertebræ. As Dr. Shore mentioned, Foster and Bassett [5] have published the histories of two cases of severe, poorly regulated diabetes in young men, complicated by a Charcot ankle-joint.

The following case at present under observation in our diabetic clinic seems worth describing.

A clerk, aged 62, was first seen in January, 1939, with a four weeks' history of thirst, polyuria, and loss of weight. At that time no abnormal signs were discovered in the central nervous system; he was treated by diet alone, and his symptoms rapidly subsided. When complaining of chronic pains in his limbs in June, 1942, the knee and ankle jerks were found to be absent, and treatment with insulin was started. About a year later, because of diarrhœa the dose of insulin had to be reduced. In November, 1943, he developed acute iridocyclitis, and in 1944 he was treated for trophic ulcerations on the right leg; there were then signs of peripheral neuritis; the Wassermann reaction (W.R.) was negative. During 1945 he complained of giddiness and deafness and was found at times to have a fine nystagmus which, it was suggested after full examination, was due to toxic neuritis of the right auditory nerve. The blood W.R. was again negative. The cerebrospinal fluid (C.S.F.) contained no cells and 50 mg. of protein per 100 ml.; the test for excess globulin was negative as was the W.R.

In October, 1946, without antecedent trauma, the patient suddenly began to have severe pain in his left knee which was swollen and hot, though only osteoarthritis with some osteoporosis was revealed by radiography. Two months later, however, further X-ray films showed a pathological fracture at the upper and inner border of the left tibia, with marked bone sclerosis and new bone formation. Although then

1. Rundles, R. W. *Medicine, Baltimore*, 1945, **24**, 111.
2. Bailey, C. C., Root, H. F. *J. clin. Invest.* 1942, **21**, 649.
3. Jordan, W. R. *Arch. intern. Med.* 1936, **57**, 307.
4. Jordan, W. R. *Sth. med. J.* 1943, **36**, 45.
5. Foster, D. B., Bassett, R. C. *Arch. Neurol. Psychiat.* 1947, **57**, 173.

tender, the joint has since become painless, but has remained grossly swollen; and it is now completely disorganised. Full examination at that time revealed small irregular pupils irresponsive to light and convergence; almost complete loss of vision due to bilateral cataracts; loss of all tendon-reflexes but brisk abdominal reflexes; and diminished cutaneous sensibility in "glove-and-stocking" areas. Ataxia and incoördination were not pronounced; there was generalised muscular wasting of the legs with loss of power, but no gross hypotonia or muscle tenderness. The C.S.F. examination was repeated with a similar result except that the globulin reaction was positive; but the colloidal-gold curve was 0000000000. The W.R. was again negative in both blood and C.S.F.

It has been suggested that this in fact is a case of tabes dorsalis complicated by diabetes; but the loss of pupil reaction can be explained on the history of diabetic iritis and keratitis, and in the absence of historical, clinical, or serological evidence of syphilis, a diagnosis of diabetic arthropathy appears justifiable.

My thanks are due to Dr. H. K. Goadby, who is in charge of St. Thomas's Hospital diabetic clinic, for permission to publish the above case.

St. Thomas's Hospital, London, S.E.1. G. E. SPEAR
Medical Registrar.

PENICILLIN BY MOUTH

SIR,—I read with great interest the excellent article by Dr. Stewart and Dr. May in the issue of Dec. 13. This investigation has been wanted ever since the introduction of penicillin therapy. I wish to add a rather modest contribution to their findings.

I have used penicillin by mouth for the last twelve months in chronic wards. I was prompted to oral administration of penicillin by: (1) the natural aversion of elderly patients to needling; (2) the effectiveness of this route in children; and (3) American publications. I have used it in various conditions such as urinary infections, respiratory infections, bedsores, and skin infections; at first I was surprised by its beneficial effect but later was surprised if it failed. I ascribed the failures to penicillin-insensitive organisms and to the feeble circulation in greatly debilitated chronically ill or very old people. No doubt some of my failures must have been "poor absorbers"; and possibly the dosage was inadequate.

I gave 500,000 units twice daily: the first dose approximately two hours after breakfast, and the second two hours after tea. I used both yellow and white penicillin diluted in 10 ml. of distilled water. The complications I met were stomatitis during penicillin treatment in 2 cases, and in 1 case an urticarial rash with giant weals ten days after cessation of treatment. However, this last patient was treated concurrently with sulphadiazine, and one and three days before the appearance of the rash he had two sittings of ultraviolet-light treatment. Thus, I rather hesitate to blame the penicillin for the rash.

Joyce Green Hospital, Dartford. E. GANCZ.

VIABILITY OF TREPONEMA PALLIDUM

SIR,—Readers of Dr. Lumsden's article on the above subject, in your issue of Dec. 6, may be interested in an experiment which I carried out in 1933, in collaboration with Dr. McNabb, Dr. Matthews, and Dr. McClure of the Toronto Public Health Laboratory. This was reported in the *Bulletin of Hygiene*[1] (in reviewing a paper by these authors[2] on a combined outfit for collection, in capillary tubes, of specimens in the field); it was also mentioned in a letter to THE LANCET.[3] Briefly, the Canadian workers sent me six outfits for collection of specimens for dark-ground examination, and these were filled in the V.D. department, St. Thomas's Hospital. On arrival in Toronto, the contained specimens of *Treponema pallidum* were found to be still motile. Three of the tubes were returned to me with another collected in Toronto. The contained *T. pallida* were still motile, and the preparations of them, each now between slide and cover-slip luted with wax, were returned to Toronto. They were reported to be still motile there and were returned to me. In London motility continued for four days after receipt. Thus three of the specimens crossed the Atlantic four times and the fourth three times; the intervals from the taking of the specimens to final disappearance of motility were, 84, 75, 72, and 50 days. The persistence of motility after the third journey was confirmed by the Toronto workers and after the fourth by those in my clinic.

London, S.W.1. L. W. HARRISON.

1. 1934, **9**, 125.
2. McNabb, A. L., Matthews, G., McClure, A. D. *Canad. Publ. Hlth J.* 1933, **24**, 405.
3. Harrison, L. W. *Lancet*, 1934, **i**, 156.

BLOOD SAMPLES FROM INFANTS

SIR,—Blood may be collected from infants under 12–18 months of age from the anterior fontanelle, the heel, the jugular vein, or the great toe. To obtain 5–10 c.cm for serological tests is not always as easy as in an adult. Recently I had occasion to take samples from a series of 150 infants and found the great toe a convenient site to use.

The patient's right leg (if the doctor is right-handed) is bathed for ten minutes in warm water; it is dried and a crêpe bandage firmly applied from the ankle to above the knee. The nurse then holds the baby so that its right foot rests between the operator's knees, while the foot, after sterilisation with methylated ether, is firmly grasped in the left hand and the great toe steadied. Using a Graefe's cataract knife, an incision about $^1/_8$ in. long and $^1/_{10}$ in. deep is made on the internal aspect of the toe parallel with its long axis. The crêpe bandage is relaxed and the toe slowly rotated clockwise through an angle of 45° with a firm grip. The grip is then relaxed and the toe released. As this movement is repeated the incision automatically opens and a wave of blood flows down the inside of the foot and can be collected to the desired amount.

If the foot is held firmly and the incision made rapidly it is surprising how little evidence of pain is registered by the patient—little girls especially being apparently more curious than hurt by the whole procedure. When sufficient blood has been collected the flow is stopped by firm pressure with cotton wool for 30 sec. and a small elastic adhesive dressing applied immediately. This, in all cases, was sufficient to arrest the bleeding and secure healing by first intention.

Manchester. ANDREW V. MAGEE.

Parliament

FROM THE PRESS GALLERY

Medical Practitioners and Pharmacists Bill

ON Dec. 16 the House of Lords agreed to the Commons amendments to this Bill.

QUESTION TIME

Fowl Pest

Sir J. BARLOW asked the Minister of Agriculture how many cases of fowl pest there had been in each of the last six months; and what precautions were being taken to combat this disease.—Mr. T. WILLIAMS replied: The figures for June to November are 209, 112, 62, 145, 539, and 665 respectively. I have made an order prohibiting in certain circumstances the sale, movement, and gathering of live poultry in England and Wales. The importation of dead poultry from countries in which the disease exists is prohibited, and the importation of dead poultry from Europe is limited to eviscerated carcases. There has been some diminution in the spread of the disease since the beginning of this month—98 outbreaks were reported from Dec. 1 to 11, compared with 276 for the corresponding period in November.

Sir J. BARLOW: Is the Minister aware that certain expert opinion is that this disease is transmitted to poultry in the marrow of bones so that the importation of drawn poultry does not entirely meet the case?—Mr. WILLIAMS: We get all our advice from our experts and we act accordingly.

THE title and status of emeritus professor of medicine of the University of Athens has been awarded to Dr. A. P. Cawadias by royal Hellenic decree.

THE Royal Society has appointed Dr. G. S. Dawes, of Worcester College, Oxford, to a Foulerton research fellowship in medicine.

Obituary

BERNARD SPILSBURY

KT., M.A., B.M. OXFD, F.R.C.P.

ENGLISH forensic medicine has lost a commanding figure in the death of Sir Bernard Spilsbury on Dec. 17 at the age of 70. For thirty years he had stood alone and unchallenged as our outstanding medicolegal expert, achieving both public and academic distinction and earning by his conscientious application and integrity the high regard of his own critical profession.

Educated at University College School, Manchester Grammar School, Magdalen College, Oxford, and St. Mary's Hospital, he was trained in bacteriological work as a member of Sir Almroth Wright's team at St. Mary's, but towards the end of King Edward VII's reign he set out on his career as a morbid anatomist and histologist, holding posts in these branches of medicine for many years at both St. Mary's and St. Bartholomew's Hospitals, and relinquishing them only because of increasingly heavy calls on his services as a forensic expert. He had a flair for simple exposition, and his painstaking search for evidence, together with his gift for evaluation and reasonable inference, quickly proved their usefulness to the police. To these basic qualities he added an honesty of purpose and a personal integrity that was never questioned: he provided a pillar of security in the medical evidence for Crown prosecutions in crime. Once Spilsbury had made up his mind he adhered to his views inflexibly, immune alike to assault and to the blandishments of flattery. He was indeed a master of the art of plain unvarnished reasoning, and both time and the circumstantial evidence bore out his soundness in case after case from the time of Crippen to that of the bandit murdering of Antiquis.

Topical Press Agency

He achieved in turn acknowledged leadership in his profession, academic lectureships, examinerships at Oxford and London, Home Office approval, a knighthood (in 1923), fellowship of the Royal College of Physicians, and presidency of the Medico-Legal Society—all with the same apparent imperturbability and the same secret pride, unaffected yet aware of his qualities of leadership in a previously unled profession. His natural reserve was never overcome and he remained humble with his own conscience, strange and unacceptable as this may seem to those who merely saw but did not know him. His assurance in the witness-box misled the public into the belief that he had become a witness for the prosecution; but there were occasions when his prescience dissipated suspicion and freed an innocent prisoner.

Spilsbury spent many hours and much tedious work in making up his mind; he wrote elaborate notes and longhand reports. But, despite his stubborn resistance to any effort to shake his belief in what he had determined was the truth, he remained impartial and scientifically reasonable, difficult to tilt, aloof and a little cold, but prepared to accept challenge even if he did not welcome it. No practitioner worked harder; he never failed to visit the scene of a crime, town or country, day or night, and never failed to be at hand at the trial, ready to accept reason or rebut the unacceptable. Fees were of no great importance to him, and indeed his disinterest in money limited both his leisure and his material relaxations. As a lecturer he shone less brilliantly, disliking routine teaching, writing but little and lecturing even less outside his three London school appointments—St. Thomas's, University College, and the Royal Free. Retiring and outwardly frigid, he disliked visits from strangers and seemed somewhat distant to casual professional acquaintances. In reality he was a lonely man, an idealist in plan, compromising in practice, relaxing little. He overtaxed his failing health and was sadly stricken by the loss of two of his three sons, fading finally to a figure which, though it never lost respect, became too frail for this hard world. He will remain a revered figure in medicine.

HAMISH FALCONER MASSON

M.A., M.B. EDIN., F.R.C.S.E.

Dr. H. F. Masson, who died on Dec. 7 at the age of 45, was the third son of the late George Masson, J.P., of Kingussie. He was educated at Fettes College and Edinburgh University, where he took a classical M.A. in 1932, and three years later his M.B. After holding house-appointments at Preston Royal Infirmary and Kettering General Hospital he took his F.R.C.S.E. in 1930. For a time he was in practice in Dingwall before settling in South Woodford, where he had practised for the last ten years.

"Hamish Masson," writes J. B. Y., "had intellectual gifts that could have carried him to a high place amongst consultants, but he preferred general practice with its more personal human contacts. His handsome appearance and attractive personality made him a conspicuous figure in any company, but no man so gifted was ever more unassuming, or more tolerant towards his fellow men. His work made great demands upon him, and he never spared himself. In the last year his health gave some grounds for anxiety, but the end, when it came, was unexpected."

Dr. Masson, who married only eighteen months ago, leaves his widow with a young son.

DOUGLAS ARTHUR CLOUSTON McRAE

M.B. EDIN., M.R.C.P.E.

Dr. D. A. C. McRae, director of the blood-transfusion services for South-east Scotland, who died recently in Edinburgh, graduated M.B. at Edinburgh in 1938. After qualifying he held house-appointments at the Edinburgh Royal Infirmary, where he later became clinical tutor. McRae was a former president of the Royal Medical Society, and one of his contemporaries writes: "He was the most brilliant man of his year, although no academic honours came his way as an undergraduate, for his intellectual energies were spent in many and diverse channels—the Bach Society and Palestrina Club were only two of his cultural activities. A man of infinite charm, he leaves nothing but pleasant memories for those who knew him well."

HENRY COOPER

D.S.O., M.A. CAMB., M.R.C.S.

Group-Captain Henry Cooper, who died on Dec. 13, was one of the pioneers who, at the end of the 1914–18 war, were responsible for the formation of the medical service of the Royal Air Force.

Born in 1877, the second son of John Spyvee Cooper, of Hull and Windermere, he was educated at Denstone College and Emmanuel College, Cambridge, where he took the natural sciences tripos in 1899. From Cambridge he went to the London Hospital, and after qualifying in 1904 he entered the Royal Navy. During his service in the Mediterranean he was present at the fall of Salonika, and he was in Constantinople during the Balkan war. In 1914–18 he served ashore in France and Belgium with the R.N.A.S. and armoured cars, receiving the D.S.O. and being appointed an officer of the Crown of Belgium for his distinguished and gallant conduct. With the formation of the Royal Air Force in 1918 he transferred to the new Service, and he was one of the small company under Sir Matthew Fell who started its medical branch. As may be imagined, this was a period bristling with difficulties, which provided wide opportunities for Cooper's organising abilities, inexhaustible tact, patience, and kindliness. On leaving the Air Ministry in the early days of the new Service he went to India as principal medical officer, R.A.F., whence he was posted to Iraq in a similar capacity, where he dealt competently with an epidemic of cholera. On his

return to this country he was appointed P.M.O., Air Defences of Great Britain. From 1930 to 1932 he was honorary surgeon to the King.

After he retired in 1932, Cooper became clerk and registrar to the Society of Apothecaries, and the ancient hall of the society and its contents were a never-ending delight to his sense of history. When war broke out in 1939, though long past the age of recall, he volunteered for service and became P.M.O., Balloon Command, and from 1942 to 1945 he served at the Ministry of Health as assistant director of personnel in the E.M.S.

In 1906 he married Miss Grace Shone, who survives him with one daughter.

HERBERT THOMAS HERRING

O.B.E., M.B. DURH.

Dr. H. T. Herring, who died in London on Nov. 22, received his medical education at University College, London, and at Newcastle-on-Tyne. He took the Conjoint qualification and his M.B. Durh. in 1887 and he held a house-appointment at University College Hospital. Setting up in practice in Weymouth Street and later in Harley Street he followed Buckston Browne as assistant to Henry Thompson. At that time, before the advent of prostatectomy, the only method of relieving obstruction was by catheterisation, and as this had to be carried on indefinitely, asepsis was of vital importance. Herring devoted all his ingenuity to perfecting his technique, and was so successful that he was able to catheterise patients for years without producing cystitis. He published in both English and German his method of sterilising catheters, besides a considerable number of other communications based on a large urological experience. He was probably the last surgeon in this country to pass a catheter with the patient standing erect, his back pressed firmly against a velvet-covered area on the wall of the consulting-room. It is a method now forgotten, which is much simpler to use than one would imagine. The late Sir Peter Freyer once demonstrated it to an interested group at St. Peter's Hospital, and in his hands it seemed easy.

Through Sir Henry Thompson, Dr. Herring became interested in cremation, and served as honorary secretary of the Cremation Society, medical referee to the Woking crematorium, managing director of the Woking and Golders Green Crematoria, and honorary treasurer of the International Cremation Federation. In the later years of his life he set out daily from his home in Harley Street to the Cremation Society's offices in Baker Street, and in name and person he became well known to a large circle of doctors who sought the society's help.

THE LATE DR. BOLTON

Mr. F. J. M. Barrington writes: Though known best to most of his acquaintances as a physician of unusually sound judgment, the most remarkable feature of Charles Bolton's life was probably that he continued doing experimental research not only after he had a busy practice but even after he had retired from his hospital's staff. In fact he only stopped this when prevented by ill health. When he was director of the Graham research laboratories of University College Hospital medical school from 1908 to 1914, the people working there were nearly all trying to do something different, according to their interests, with the result that the possibility of any "direction" was slight. In spite of this he generally seemed to know what everyone was doing, and whether it was likely to lead to any good or not. A result of this circumstance was that he had more time for his own experiments, and in these years he probably did more than at any other time, chiefly on the production and absorption of lymph and on the healing of acute gastric ulcers. He was an exceptionally dextrous operator.

JAN MAZURKIEWICZ

Dr. J. Leyberg writes: Professor Mazurkiewicz, director of the psychiatric clinic at Warsaw University, died in Warsaw on Oct. 31. For many years president of the Polish Psychiatric Association, he was the most outstanding psychiatrist in the country. His organic approach to psychiatry was profoundly influenced by the writings of Pavlov, Sherrington, Adrian, and Hughlings Jackson, and his lectures enabled many Polish graduates to become acquainted with the British school of neurophysiology. During the German occupation he wrote a book on Evolution and Dissociation in the Central Nervous System, which is to appear shortly. His death will be sadly felt in Poland, particularly by those who had the privilege of working under his wise and friendly guidance.

Diary of the Week

DEC. 28 TO JAN. 3

Monday, 29th

ROYAL COLLEGE OF SURGEONS, Lincoln's Inn Fields, W.C.2
5 P.M. Mr. F. A. Williamson-Noble: Contact Lens.

Tuesday, 30th

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. A. G. Cross: Ocular Sequelæ of Head Injuries.

Wednesday, 31st

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. J. D. M. Cardell: Orthoptics.

Thursday, 1st

ROYAL COLLEGE OF SURGEONS
5 P.M. Dr. John Marshall: Ophthalmology in Relation to the Throat and Nose.

Friday, 2nd

ROYAL COLLEGE OF SURGEONS
5 P.M. Mr. L. H. Savin: Ptosis.

Births, Marriages, and Deaths

BIRTHS

BUKY.—On Dec. 15, in London, the wife of Dr. W. W. Buky—a son.

CORMAC.—On Dec. 6, at Stockport, the wife of Dr. C. D. Cormac—a daughter.

DORNHORST.—On Dec. 15, in London, the wife of Dr. A. C. Dornhorst—a daughter.

DOWLING.—On Dec. 15, in London, the wife of Dr. M. A. C. Dowling—a son.

GAULD.—On Dec. 14, in London, the wife of Dr. G. O. Gauld—a son.

KENIG.—On Dec. 11, in London, the wife of Dr. M. Kenig—a son.

KING.—On Nov. 19, at Klagenfurt, Austria, the wife of Lieut.-Colonel Cecil King, R.A.M.C.—a daughter.

LONGRIDGE.—On Dec. 12, at Salisbury, the wife of Dr. R. G. M. Longridge—a son.

MACKAY-DICK.—On Dec. 4, at Wuppertal, Germany, the wife of Lieut.-Colonel John Mackay-Dick, R.A.M.C.—a daughter.

MACKENZIE.—On Dec. 12, in London, the wife of Dr. A. G. Mackenzie—a daughter.

NIBLOCK.—On Dec. 7, at Peshawar, Pakistan, the wife of Major W. McN. Niblock, F.R.C.S.—a son.

PRICE.—On Dec. 10, to Dr. Celia Westropp and Francis Price—twin sons.

PRITCHARD.—On Dec. 14, at Chobham, Surrey, the wife of Dr. P. M. M. Pritchard—a daughter.

WATSON.—On Dec. 10, at Devizes, the wife of Dr. R. W. Watson—a son.

WHEATE.—On Dec. 10, in London, the wife of Dr. H. W. Wheate—a son.

MARRIAGES

MURPHIE—LINDOW.—On Nov. 29, in London, Charles Ian Murphie, B.M., to Elizabeth Anne Lindow.

STONE—SIMPSON.—On Dec. 13, in London, Patrick Stone, M.B., to Elisabeth Moone Simpson.

WOODYATT—PARBERY.—On Dec. 10, in London, Peter Bruce Woodyatt, M.R.C.S., to Elaine Joan Parbery.

DEATHS

COOPER.—On Dec. 13, in London, Henry Cooper, D.S.O., M.A. Camb., M.R.C.S., group-captain, R.A.F.

CURPHEY.—On Dec. 12, at Bath, Elizabeth Curphey, B.SC. Lond., M.R.C.S.

DOWLING.—On Dec. 15, at Preston, Lancs, Edward Dowling, B.A., M.D. R.U.I.

FINDLAY.—On Dec. 13, in Edinburgh, James Findlay, M.A., M.B. Glasg., lieut.-colonel, I.M.S. retd.

FREETH.—On Dec. 16, Arthur Causton Freeth, M.B. Durh., aged 57.

JOHNSTON.—On Dec. 15, at Prestatyn, Francis Johnston, M.B. Glasg., aged 89.

MILLIGAN.—On Dec. 11, at Guildford, James Knowles Milligan, M.R.C.S., aged 65.

SPILSBURY.—On Dec. 17, in London, Bernard Henry Spilsbury, Kt., M.A., B.M. Oxfd, F.R.C.P.

STEWART.—On Dec. 8, at Gerrards Cross, Bucks, Rothesay Charles Stewart, M.R.C.S.

WOOLLEY.—On Dec. 16, at Hove, Jasper Maxwell Woolley, M.D. Camb., D.P.H., lieut.-colonel, I.M.S. retd.

Notes and News

THE TAVISTOCK CLINIC

LAST year the professional committee appointed to consider the rôle of the Tavistock Clinic in the post-war world, and the ways in which its work in social psychiatry might be extended, made two important decisions [1]—that the assets of the clinic should be spent on anticipated costs up to the day when it will be handed over to the Ministry under the National Health Service, and that the Institute of Human Relations should be legally separated from the clinic so that it may continue its independent work in fields not covered by the N.H.S.

The clinic and institute are organised on a practical plan: all members of the staff belong to work-groups known as units, with the coördination unit acting as a secretariat to the others. A senior member of the full-time staff, who is also on the professional committee, is responsible for one or more of these units, and these members also form the management committee of both clinic and institute. Each unit carries out projects in its own field but also contributes to training and research. At present, besides the coördination unit, there are an adult unit and a child-guidance unit. The adult unit offers to patients a consultation and counselling service, and a treatment service. Some patients require individual therapy for longer or shorter periods, but others can be helped considerably in group discussions.

The Institute of Human Relations, in a statement of aims and policy, is described as an attempt to develop a scientific institution equipped to respond to practical social demands such as problems of industrial morale, in new communities and in many aspects of education and family life. It undertakes work arising out of specific requests for help, and gives full technical collaboration to all concerned with a particular problem—assuming joint responsibility in working things out to a satisfactory finish, rather than giving an "expert opinion" and retiring from the field. Like the clinic, the institute is a federation of units, and these cover industrial projects, social and cultural projects, and educational projects; a fourth unit is responsible for publications, among which is a quarterly journal, *Human Relations*. The research programme includes accurate assessment of work done, and the development of new methods, especially with group technique and the study of "group dynamics." Group treatment of psychiatric patients, group discussion methods for education and training, and group techniques for such special purposes as leadership training and personnel selection are being studied. It is also hoped to develop new means of appraising personality and intelligence, and of treating speech disorders, and to study the causes, prevention, and treatment of delinquency.

WORK FOR THE BLIND

THE wide scope of the work of the National Institute for the Blind shows how much generous sympathy blindness excites, and to what practical use it can be put. The report for 1946–47 says that, besides an educational programme for children from birth to school-leaving age, the institute has two schools for adults—a school of physiotherapy and a school of telephony. At the school of physiotherapy, Great Portland Street, 40 students are in training, both blind civilians and ex-Service men and women, and there are increasing numbers of applications for places from the Dominions. During the year, 21 new trainees entered the school of telephony at Bridgnorth.

The Queen Elizabeth Homes of Recovery—America Lodge, Torquay, and Long Meadow at Goring-on-Thames—are centres for the training and reinstatement of the newly blind. Newcomers, removed from the fussy commiseration of relatives, find themselves among others who have mastered their disability. Their seemingly casual welcome is carefully planned, and they quickly find themselves sharing in a full and active life—learning Braille, Moon, and typing; trying their hands at woodwork and pottery; visiting cinema and theatre; taking part in dances and concerts; playing cards, draughts, chess, dominoes, and darts; bathing, rowing, and riding horses—and learning all the time to observe and judge distance by sound.

Since 1943 the placement section has found work in industry for over 700 blind men and women; and though some of these lost their work during the change over to peace conditions, over 600 kept their jobs, and a further 178 have been found work in the past year. A subcommittee on professional placement looks after the interests of blind professional people; and a permanent subcommittee does its best to help blind men with a strong sense of vocation to join the clergy and to carry out their duties effectively. Much of the work of the institute itself is done by blind people, and this is greatly encouraging to those newly blind who come to discuss their problems. "When a newly blind person finds that his phone call for an appointment is answered by a blind operator, that he is interviewed by a blind adviser with a blind stenographer at his elbow, that a blind guide conducts him round the building and shows him blind secretaries, blind transcribers, blind proof-readers, blind writers, blind typists, blind lecturers, blind musicians, blind physiotherapists, blind students at work, and that, to crown it all, a blind man, without a guide, puts him on the right bus for home, then he must feel encouraged. . . ."

The publication of Braille and Moon books, newspapers, and other periodicals is up to the pre-war level, but any increase in scope must depend on better supplies of paper. New premises have been found for the sound-recording studio for talking books, and new talking-book machines are being steadily acquired and supplied to users; but like all other equipment and appliances needed by the blind, they are still scarce.

GROWTH OF PART-TIME NURSING

ON Sept. 30 there were 17,257 part-time members of the nursing and midwifery staffs in our hospitals and other services. According to a report recently presented to the National Advisory Council on Nursing and Midwifery, this shows an increase of about 12,200 on the numbers of part-timers employed nine months before. The growing numbers have meant that waiting-lists for hospital beds, especially for chronic patients, have been greatly reduced, and in some areas have even disappeared. Many regions are now following the successful lead of Gloucestershire and Wiltshire, and the council consider that part-time schemes could be even more widely and thoroughly developed.

FAILURE AS A FAMILY

THE British Social Hygiene Council [1] is now publishing "occasional papers," of which the second is "Problem Families," [2] by Dr. C. Fraser Brockington. The common denominator of these families is that they are "unable by their own efforts to raise themselves from the state into which they have fallen." Dr. Brockington feels that existing social measures do not meet their needs, for the laws protecting children require that they should be removed from the family and placed in different surroundings, whereas the real need is for family regeneration. Moreover, in such problem families there are often strong ties of affection, and parents and children alike suffer when they are separated. He wishes to see a system of "family probation" introduced, problem families being registered as such and placed under the care of local authorities for rehabilitation. Arguments against registration will come readily to mind,[3] but all will agree with Dr. Brockington that it is more liberal to keep the family together (perhaps even at the cost of registration) and to attempt their regeneration as a group, than to compel them to separate. A possibility which he mentions—that of providing hostels where refractory or incompetent mothers can be given training—is already being tried by the Society of Friends.[4]

Dr. W. F. Roper, in "When the Family Fails," [5] discusses the process of socialisation, which, he says, calls for "the gradual interposing between the child and the gratification of his desires of the requirement that he shall secure what he wants by socially desirable means." This is what the family normally achieves, but when it fails the child may grow into the unsocial, the neurotic, or the criminal adult; and what is worse, will repeat his own faulty training in bringing up his family. Dr. Roper hazards a guess at the size of the problem: each year some 80,000 people in Great Britain

1. Annual report of the Tavistock Clinic and the Tavistock Institute of Human Relations, 1946. Obtainable from the secretary, 2, Beaumont Street, London, W.1.

1. Address: Tavistock House North, Tavistock Square, London, W.C.1.
2. Pp. 11. 6*d*.
3. See *Lancet*, 1946, i, 928.
4. *Ibid*, 1947, i, 266.
5. Pp. 10. 6*d*.

commit indictable offences, and a quarter of these are reconvicted within five years; there is evidence that some 5% of the adult population—and this is very likely an underestimate—are adversely affected by neurotic symptoms; and he puts the proportion of the "ill-conditioned"—aggressive, acquisitive, selfish, and censorious people who work against the best interests of society—at about 10%. Thus, at least a quarter of the population would have benefited by being better brought up. He sees four main lines of prevention: improved economic status of families will remove one incentive towards selfish and acquisitive impulses; treatment of the ill-conditioned in prison, clinic, school, and institution may help to make better parents of them, and so benefit the new generation; family can help family in associations like the Peckham Health Centre; and propaganda will wake interest and spread knowledge. Finally, research alone can teach us more about the results of family failure and the remedies for it.

HONG-KONG'S HEALTH

NINE months ago we reviewed [1] the official report of Hong-Kong's war-time privations. The latest report [2]—that for 1946—is the last to be made by Dr. P. S. Selwyn-Clarke as director of Hong-Kong's medical services, before his appointment as governor and commander-in-chief, Seychelles. The statistics for last year give little hint of the hard years that went before. The infant-mortality rate was a third of that in 1940 and a sixth of that in 1931; while the death-rate (56·9 per 1000 in 1940) fell to 14·2. The report observes that two theories have been advanced in explanation of this fall: one is that the weaker went to the wall under the rigorous siege conditions; and the other is that the partial replacement of rice by flour has made for a better-balanced diet, with a lowered incidence of beriberi and other nutritional diseases.

University of Oxford

On Dec. 13 the degree of D.SC. was conferred on Mr. J. Walker, PH.D., a member of the scientific staff of the Medical Research Council in the chemotherapy department of the National Institute.

University of Manchester

At recent examinations the following were successful:

Final M.B. and Ch.B. Examination.—Mary K. Astin, Anthony Coady, M. B. Edwards, D. D. Hilton, R. A. Kershaw, Alwyn Kinsey, C. I. Moss, Raymond Ormerod, J. E. Parry, F. A. Rainford, O. R. W. Sejrup, Bernard Stone, Margaret E. Thorp, R. J. A. Webb, H. W. Wilson, Peter Wolf, D. H. Wright.

D.P.M. (part II).—George Christie, Frank Howarth, Helen E. Smith.

Royal College of Physicians of London

On Tuesday and Thursday, Feb. 10 and 12, at 5 P.M., Prof. G. S. Wilson will deliver the Milroy lectures at the college, Pall Mall East, S.W.1. He is to speak on the Public Health Laboratory Service.

Royal College of Surgeons of England

Sir Hugh Cairns, Nuffield professor of surgery in the University of Oxford, has left for a three months' visit to Australia and New Zealand as the first Arthur Sims travelling professor of the college. He will deliver lectures, make contact with medical scientists, and take part in research and postgraduate teaching. Later he is also to visit the principal medical centres of South Africa.

Colonial Office

Dr. R. S. F. Hennessey has been appointed an assistant medical adviser at the Colonial Office.

Dr. Hennessey, who is 42, graduated M.B. at Dublin in 1927, and later studied at the London School of Hygiene and Tropical Medicine, taking the DIPL. BACT. in 1932 and the D.T.M. & H. in 1939. In 1932 he also obtained his M.D. and in 1935 he became M.R.C.P.I. He was appointed to the Colonial Medical Service in 1929, and joined the Uganda laboratory service as a pathologist in that year. In 1944 he was transferred to Palestine as deputy director in charge of the Government medical laboratories, and later became deputy director of the Palestine department of health. While in Uganda, Dr. Hennessey was lecturer in pathology at Makerere College medical school. His published work on tropical pathology includes papers on keratomalacia in liver disease and on leucocyte output and vitamin intake. He was an associate editor of the *East African Medical Journal*.

1. *Lancet*, 1947, i, 566.
2. Hong-Kong Government: Annual Report of the Medical Department for 1946.

Faculty of Radiologists

Of the nine candidates who sat the recent examination for the fellowship of the faculty, the following were successful: J. E. Blewett, W. J. Latham, S. A. Maddocks (radiodiagnosis); and Esmond Millington (radiotherapy).

Society of Apothecaries of London

A court dinner was held in the hall of the society on Dec. 16 to celebrate the 330th anniversary of the first meeting of the court of assistants on Dec. 16, 1617. Prof. E. C. Dodds, F.R.S., the master, described the London of those days—the London Shakespeare knew. At a time when trade was more intimate and personal than it ever is today, the apothecary was principally a tradesman; he previously belonged to the Grocers' Company, and before that to the Pepperers. But his trade needed much knowledge and skill, and he had already begun to visit patients instead of merely dispensing medicines prescribed by physicians. The society had since attained and maintained a unique place in the life of the community, being at once a City company and a professional body granting licences to practise. It had played its part throughout the centuries through buffetings like those experienced by London itself, and it still looked to the future rather than the past. Sir Frederick Wells, the lord mayor, who was accompanied by the sheriffs, said that today it is more than ever necessary to maintain the great traditions for which the City companies stand. Dr. C. Thackray Parsons, past master, remarked that "330 years is hardly a day in the life of this great city founded by Magog, grandson of Noah." With suitably classical allusions he welcomed The Guests, among them the Bishop of London, Sir Henry Dale, O.M., and Captain A. Faunce-Delaune, descendant of the society's founder, Gideon Delaune, who died at 95 (or 97) after producing 37 children by one wife. Captain Faunce-Delaune, who still lives at Shelstead Manor, bought by one of Gideon's sons, admitted to "some nebulous connexion with the gentleman in marble." Sir Henry Dale, also responding, was even more guarded about his association with the portrait of Samuel Dale, the first writer to apply the term pharmacology to the materia medica. Pointing to the contrast between Samuel Dale's time and our own, he said that, so far as medicine is concerned, the present epoch is characterised by a fertilising reunion between organic chemistry and biological science, and in no direction have more revolutionary advances been made than in medical treatment. Well into living memory—long after the apothecaries became licensed practitioners, the rank and file of a great profession—therapeutics changed little in aim and principle. Whoever expected that doctors' medicine would do anything in particular? The best hoped for was that it would make the patient comfortable and leave nature to get on with the contest. Today, on the other hand, we have a range of remedies which really deal with the cause of disease. Is it realised, for example, what a chance we have of altogether getting rid of diphtheria in this country if Sir Wilson Jameson receives the support his campaign deserves? Progress is proceeding and accelerating: each month, almost, holds out the prospect of subduing another of our old enemies. The hopes to which the society's founders were clumsily groping their way show signs of being realised by science—if only science can be saved from perverting itself to the destruction of mankind.

Corrigendum.—The article by Major Collard and Lieut.-Colonel Hargreaves on Neuropathy after Stilbamidine Treatment of Kala-azar (Dec. 6, p. 686) contained the statement that pentamidine is known to cause polyneuritis. This is true of a related substance but not of pentamidine itself.

Appointments

BASTER, NORMAN, M.B. Leeds, D.P.H.: asst. county M.O.H., Worcs, and M.O.H., Redditch and Bromsgrove.

CLELAND, W. P., M.B. Adelaide, F.R.C.S., M.R.C.P.: asst. surgeon, Hospital for Consumption and Diseases of the Chest, Brompton.

FALLA, W. A. S., M.D. Durh., D.P.M.: medical superintendent, Bracebridge Heath Mental Hospital, Lincoln.

HODSON, C. J. C. G., M.B. Lond., M.R.C.P., D.M.R.E.: radiologist, University College Hospital, London.

LEWIS, R. I., B.SC. Wales, M.D. Lond., D.M.R.E.: radiologist, Royal Halifax Infirmary.

MILLER, A. A., M.A., M.D. Edin., D.T.M., D.P.H.: director of department of pathology, Preston and County of Lancaster Royal Infirmary.

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References :—Shortage of space precludes list of references, but full documentation may be obtained on application to Clinical Research Dept. 36B

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Resident Physicians—BERTHA M. MULES, M.D., B.S. ANNE S. MULES, M.R.C.S., L.R.C.P. *Telephones*—TEIGNMOUTH 289 and 537

CALDECOTE HALL

NUNEATON, WARWICKSHIRE

For treatment of

Alcoholism & Neuroses

Beautifully situated country mansion in Warwickshire
Extensive grounds for the therapeutic occupations

See Medical Directory, page 2523

Illustrated Brochure from Resident Medical Superintendent, A. E. CARVER, M.D., D.P.M. Phone: Nuneaton 2841

RUTHIN CASTLE, NORTH WALES

A Private Clinic, the first in Great Britain, for investigation and treatment of all forms of disease, except infectious and mental

Nursing, dietetic, massage, x-ray and laboratory departments **Central heating and a lift to all floors**

Inclusive charges Apply SECRETARY Telephone: Ruthin 66

HOLLOWAY SANATORIUM, VIRGINIA WATER

for the Treatment of every kind of

NERVOUS AND MENTAL DISORDER

by modern methods, after full investigation

Voluntary, Temporary and Certified Patients

The branch establishment at Canford Cliffs, Bournemouth, is reserved for the treatment of psychoneurosis and admission is without legal formality.

Fees: first two months £8 8s. per week, thereafter £6 6s. per week; single bedrooms £2 2s. per week more. Warding for insulin or prolonged narcosis treatment is counted as single-room accommodation. No other extras.

Medical Superintendent, D. N. PARFITT, M.D., M.R.C.P., D.P.M.

Appointments arranged in London or at Virginia Water

Telephone: Wentworth 2241 Telegrams: "Sanatorium, Virginia Water"

CAMBERWELL HOUSE, 33, Peckham Road, London, S.E.5

Telegrams: "PSYCHOLIA, LONDON" *Telephone:* RODNEY 4242 (3 lines)

A PRIVATE HOSPITAL FOR THE TREATMENT OF MENTAL DISORDERS

Completely detached Villas for mild cases. Voluntary Patients received. Twenty acres of grounds; own garden produce. Hard and grass tennis courts, putting greens, Recreation Hall with Badminton Court, and all indoor amusements. Occupational therapy, Calisthenics, Actinotherapy, prolonged immersion baths, shock and also modified insulin treatment. Chapel.

Senior Physician, Dr. HUBERT JAMES NORMAN, assisted by a resident Medical Staff and visiting Consultants

An Illustrated Prospectus giving fees, which are reasonable, may be obtained upon application to the Secretary

The Convalescent Branch is HOVE VILLA, BRIGHTON, and is 200 ft. above sea-level

CHEADLE ROYAL CHEADLE CHESHIRE

A Registered Hospital for MENTAL DISEASES and its Seaside Branch, GLAN-Y-DON, Colwyn Bay, N. Wales

The object of this Hospital is to provide the most efficient means for the treatment and care of patients of both sexes suffering from MENTAL and NERVOUS DISEASES. The Hospital is governed by a Committee appointed by the Trustees of the Manchester Royal Infirmary.

VOLUNTARY, TEMPORARY, AND CERTIFIED PATIENTS RECEIVED

For Terms and further information apply to the MEDICAL SUPERINTENDENT *Telephone:* GATLEY 2231

STONEYCREST NURSING HOME

(Established 1922) HINDHEAD, SURREY

850 feet above sea level, facing South

Medical, Surgical and Convalescent patients received Resident Masseuse

Apply, Miss D. M. Oliver, S.R.N. ('Phone: Hindhead 577)

THE OLD MANOR, SALISBURY

Telephone: 3216 & 3217

A Private Hospital for the Care and Treatment of those of both sexes suffering from MENTAL DISORDERS

Extensive Grounds. Detached Villas. Chapel. Garden Produce from own gardens. Terms very moderate.

CONVALESCENT HOME AT BOURNEMOUTH

standing in 12 acres of ornamental grounds, with separate villas, tennis courts, etc. Patients or Boarders may visit the Home by arrangement.

Illustrated Brochure on application to the MEDICAL SUPERINTENDENT, The Old Manor, Salisbury

THE MAGHULL HOMES FOR EPILEPTICS (Inc.)

MAGHULL, Near LIVERPOOL

Open Air Occupation and Recreation for Patients, Farming, Gardening, Football, Cricket, Tennis, Bowls, etc. School recognised by Ministry of Education.

FEES—1st Class (men only) ... ... from £3-3-0 per week
2nd Class (men and women) ... ... ,, £2-2-0 ,,
3rd Class (men and women) supported by—
Public Assistance Committees ... ... ,, 35/- ,,
Education Committees ... ... ,, 41/6 ,,
Private ... ... ,, 23/6 ,,

For further particulars apply to—
C. EDGAR GRIFFWOOD, A.C.A., 20 Exchange Street East, LIVERPOOL, 2

ECCLESFIELD, STAPLEHURST, KENT

Home for the care and cure of Alcoholic cases (ladies). Fine mansion. 100 acres. Successful treatment. Catholic chapel on estate.

For terms apply to Sister Superior (Staplehurst 281)

HEIGHAM HALL, NORWICH

PRIVATE MENTAL HOME for Nervous and Mental Illness. All forms of treatment available. Fees from 5 gns. per week upwards, according to requirements. Vacancies occasionally exist at reduced fees on the recommendation of the patient's own physician

Apply to Dr. J. A. SMALL Telephone: Norwich 20080

Vacancies for recent cases only

CRICHTON ROYAL, DUMFRIES

FOR NERVOUS AND MENTAL DISORDERS

Cases of Alcoholism and Drug Addiction admitted. General amenities of highest standard. Every facility for all forms of treatment, including insulin and prefrontal leucotomy. Terms moderate.

Physician-Superintendent: P. K. MCCOWAN, J.P., M.D., F.R.C.P., D.P.M., Barrister-at-Law Tel.: Dumfries 1119

CITY OF LONDON MENTAL HOSPITAL

Near DARTFORD, KENT

Ladies and Gentlemen received for treatment under certificates, and without certificates as either VOLUNTARY or TEMPORARY PATIENTS, at a weekly fee of £3 3s., and upwards

MALLING PLACE, KENT

For LADIES and GENTLEMEN of Unsound Mind

Terms moderate Apply to Resident Medical Superintendent

Telegrams: ADAM WEST MALLING Telephone: 3102 MALLING

THE PSYCHONEUROSES & NEURASTHENIA

BOWDEN HOUSE
HARROW-ON-THE-HILL

Diagnostic Week. All patients spend the first week of their stay in undergoing a careful investigation. Clinical, pathological, and radiological diagnoses are used as routine, and each patient has at least one session of narco-analysis. For this an inclusive fee of 25 guineas is made. The patients come in with no commitment on either side for further treatment.

Those who are anxious to remain, and appear to the staff to be suitable, undergo intensive psychotherapy as before. The fees for this are 12 to 20 guineas a week, inclusive of regular specialist treatment.

Medical Director: H. CRICHTON-MILLER, M.A., M.D., F.R.C.P.
Deputy Director: GRACE H. NICOLLE, M.A., M.B.
Assistant Psychiatrist: W. A. H. STEVENSON, B.A., B.M., B.Ch.
Consulting Physician: J. BARRIE MURRAY, M.A., M.D., M.R.C.P.
Warden: Miss WINIFRED SHERWOOD, S.R.N.

NORTHUMBERLAND HOUSE
Green Lanes, Finsbury Park, N.4

A PRIVATE HOSPITAL for the treatment of mental and nervous illnesses. Conveniently situated and easy of access from all parts. Six acres of ground, facing Finsbury Park. Voluntary and Temporary Patients received without certification. **Insulin Coma Unit.** E.C.T. Group Psychotherapy. Trained Resident and Visiting Staff.

Telephone: STAmford Hill 7866/7 (2 lines)
Telegrams: "Subsidiary, London."

For further particulars apply to the Medical Superintendent, ROBERT M. RIGGALL, Member, British Psycho-Analytical Society.

SPRINGFIELD HOUSE
Phone: BEDFORD 3417 **Near BEDFORD**

For Mental Cases with or without Certificates

Fees from Six Guineas per week (including Separate Bedrooms for all suitable cases without extra charge)

For forms of admission, &c., apply to the Resident Physician, CEDRIC W. BOWER.

INTERVIEWS IN LONDON BY APPOINTMENT

The SURREY HILLS CLINIC
74, TUPWOOD LANE
CATERHAM, SURREY

Telephone: CATERHAM 2275 (5 lines)

For medical, surgical, and convalescent patients. Charmingly situated in 10 acres of garden and woodland 16 miles from London on the Surrey hills.

Facilities available for all clinical investigations. Physiotherapy department. Modern operating-theatre

Special diets provided by expert dietitians. Full staff of State-registered Nurses.

All rooms are private, with central heating (by oil) and telephone. Private baths to larger rooms.

Special car service day and night.

Further particulars may be obtained from the Matron's Office

UNIVERSITY EXAMINATION POSTAL INSTITUTION
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Over 50 years' experience

POSTAL COACHING FOR ALL MEDICAL EXAMINATIONS

MEDICAL PROSPECTUS (24 pages)
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A REGISTERED HOSPITAL FOR THE TREATMENT OF MENTAL DISORDERS OF THE EDUCATED CLASSES

Cases under certificate, voluntary and temporary patients, received for treatment. Modern methods of treatment available.
Terms moderate
Apply: Medical Superintendent Tel.: Exeter 2642

ROYAL COLLEGE OF SURGEONS OF ENGLAND

LICENCE IN DENTAL SURGERY

Notice is hereby given that the following Examination will commence on the date stated below:

FINAL PROFESSIONAL EXAMINATION
Friday, 23rd January.

Candidates who have fulfilled the necessary conditions, and who desire to present themselves for examination, must give notice in writing to the Examinations Secretary, Examination Hall, 8–11, Queen-square, London, W.C.1, at least 21 days before the Examination, transmitting at the same time such certificates as may be required by the regulations, together with the full amount of the fee for the part or parts of the Examination for which they desire to enter.

F. M. STENT, Examinations Secretary.

UNIVERSITY OF LONDON
BRITISH POSTGRADUATE MEDICAL FEDERATION

REFRESHER COURSES FOR GENERAL PRACTITIONERS
JANUARY–APRIL, 1948

Date	*No. of Weeks*	*Subject*	*Hospital*
19th–23rd Jan.	1	Medicine	Lewisham L.C.C. Hospital
26th–30th Jan.	1	Obstetrics and Gynæcology	Redhill County Hospital, Edgware
23rd Feb.–5th March	2	General	Royal Northern Hospital, Holloway-road, N.7.
1st April–18th June	Extended 12 afternoons	General	Hampstead General Hospital, Haverstock Hill, N.W.3.

Fees: 10 guineas for 2 weeks' course; 5 guineas for 1 week and extended courses. Schemes of financial assistance are available, subject to certain conditions, for (*a*) demobilised general practitioners, (*b*) N.H.I. practitioners.

Applications for places, and further particulars, should be made to the Secretary, British Postgraduate Medical Federation, 2, Gordon-square, W.C.1. They should state if the practitioner is applying under (*a*) or (*b*) above, or not.

UNIVERSITY OF GLASGOW
POSTGRADUATE MEDICAL EDUCATION

INTENSIVE COURSE IN MEDICINE

An intensive Postgraduate Course in Medicine will be conducted from 12TH APRIL to 4TH JUNE, 1948. The Course will consist of clinical meetings, pathological demonstrations, and lectures.

Fee: 25 guineas.

Since numbers will be restricted, those wishing to attend should make early application to the Director of Postgraduate Medical Education, The University, Glasgow, W.2, from whom further particulars may be obtained.

MAIDA VALE HOSPITAL FOR NERVOUS DISEASES, W.9

The Spring term for clinical clerking will begin on MONDAY, 5TH JANUARY, 1948. Weekly demonstrations in clinical neurology will be held in this term on 10 successive FRIDAYS at 4 P.M., beginning 16TH JANUARY.

The fee for the course of clinical demonstrations will be 2½ guineas.

Apply to the Dean of the Medical School.

GUY'S HOSPITAL MEDICAL SCHOOL

A Course of instruction for Part I of the Diploma in Physical Medicine will be given between JANUARY and JULY, 1948 (if a sufficient number apply), starting on MONDAY, 26TH JANUARY, 1948.

Further particulars may be obtained from the Dean, Medical School Office, Guy's Hospital, S.E.1.

GUY'S HOSPITAL

ASTLEY COOPER STUDENTSHIP

This Studentship, tenable at Guy's Hospital Medical School, will become vacant in January, 1948.

The student, who is called the "Astley Cooper Assistant to the Curator of the Gordon Museum," will be elected for a period of 3 years.

Particulars regarding the Studentship can be obtained from the Secretary to the Astley Cooper Trustees, Medical School Office, Guy's Hospital, S.E.1. to whom applications for the post should be addressed on or before 17th January, 1948.

POSTGRADUATE COURSE OF UROLOGICAL INSTRUCTION
AT ST. PETER'S AND ST. PAUL'S HOSPITALS

13TH JANUARY, 1948–15TH APRIL, 1948

The course will include systematic lectures covering the whole subject of urology, outpatient sessions, ward visits, operation sessions, and tutorial demonstrations.

All postgraduates taking the course are expected to attend lectures, and may attend all the tutorial demonstrations. They will be allotted individually to certain outpatient sessions, ward visits, and operation sessions.

The fee for the course is 15 guineas, payable in advance.

Applications should be made to the Secretary, St. Peter's Hospital for Stone, Henrietta-street, London, W.C.2. Envelopes should be marked "Postgraduate Course."

EDINBURGH POST-GRADUATE BOARD FOR MEDICINE

INTERNAL MEDICINE

A course lasting 12 weeks, suitable for graduates wishing a refresher course, or to specialise in medicine, begins on MONDAY, 12TH APRIL, 1948. A similar course commences on 4TH OCTOBER, 1948. These courses consist of 300 hours' instruction comprising lectures, clinical demonstrations, and ward visits. Fee 30 guineas.

GENERAL SURGERY

The 5 months' course of Postgraduate Surgery arranged to start on Monday, 29th March, 1948, is full. A similar course will begin on MONDAY, 18TH OCTOBER, 1948, and is suitable for surgeons requiring a refresher course in the current outlook on general surgery; or for graduates preparing to specialise in surgery; approximately 280 hours of instruction are provided. Fee 35 guineas.

REFRESHER COURSE FOR GENERAL PRACTITIONERS

The 12th general fortnight refresher course, primarily for demobilised Medical Officers (Class II) and for Insurance Practitioners, will commence at 9 A.M. on MONDAY, 3RD MAY, 1948. 20 hours are devoted to lectures covering a wide range of subjects, with emphasis on recent advances in treatment. 50 hours are allotted to clinical demonstrations and ward visits. (A similar course may be held in September, 1948.) Fee for graduates not claiming expenses from Government sources, 10 guineas.

Applications for enrolment to Director of Post-Graduate Studies, University New Buildings, Edinburgh, 8. Applicants for courses in Internal Medicine and Surgery should supply particulars of qualifications and postgraduate experience.

L.M.S.S.A.

FINAL EXAMINATION: SURGERY, 12th January, 9th February, 8th March, 1948. MEDICINE, PATHOLOGY, 19th January, 16th February, 15th March, 1948. MIDWIFERY, 20th January, 17th February, 16th March, 1948. MASTERY OF MIDWIFERY, May and November. DIPLOMA IN INDUSTRIAL HEALTH, August and December.

For regulations apply REGISTRAR, Apothecaries' Hall, Black Friars-lane, London, E.C.4.

THE ROYAL CANCER HOSPITAL (FREE) (Incorporated under Royal Charter), Fulham-road, London, S.W.3. Applications invited for a RESEARCH FELLOWSHIP promoted by the Association of British Chemical Manufacturers for the purposes of a field and experimental investigation of papilloma of the bladder in industry. The Fellowship will be full time and is tenable at the Chester Beatty Research Institute of the Royal Cancer Hospital (Free). Applicants should hold a medical degree, and preference given to those with additional scientific qualifications or interests, especially in chemistry or statistics. Salary £1000 p.a., plus travelling and other expenses. Appointment superannuable under the F.S.S.U., and, subject to conditions, will be made for a period of 5 years.

Applications should be addressed to reach the Secretary, The Royal Cancer Hospital (Free), Fulham-road, London, S.W.3, by Monday, 19th January, 1948.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton, S.W.3. Applications invited for following appointments from registered medical practitioners, Male and Female, including R practitioners holding A posts:—

HOUSE PHYSICIANS (B2), for which there are 3 vacancies. Duties include work in the Outpatient Dept. as well as in the Wards, and the appointments are for 6 months, commencing 1st February, 1948, with an honorarium of £100 and board and residence.

HOUSE PHYSICIAN (B2) at the Sanatorium at Frimley. Appointment for 6 months, commencing 1st February, 1948, with an honorarium of £100 and board and residence.

Applications, stating age, qualifications with dates, nationality, and present post, and accompanied by copies of 1 or more recent testimonials, should reach undersigned by 10th January, 1948.

F. G. ROUVRAY, House Governor.

WEST LONDON HOSPITAL, Hammersmith, W.6. (241 Beds.) There is a vacancy for the post of ASSISTANT RADIOLOGIST (Diagnosis). Candidates must be duly qualified medical practitioners and possess a diploma in radiology. Duties include teaching in the Medical School. The Assistant Radiologist will be required to attend at least 3 sessions each week.

Applications (without testimonials) to undersigned before 14th January, 1948, giving full particulars of age, qualifications, experience, and the names and addresses of 2 referees.

C. R. LOCKHART, Secretary.

WEST LONDON HOSPITAL, Hammersmith, W.6. (241 Beds.) SURGEON to the Throat, Nose, and Ear Dept. Duties include the charge of beds and outpatients and teaching in the Medical School. Candidates must hold one of the higher surgical qualifications.

Applications (without testimonials) to undersigned before 14th January, 1948, giving full particulars of age, qualifications, experience, and the names and addresses of 3 referees.

C. R. LOCKHART, Secretary.

PECKHAM HOUSE MENTAL HOSPITAL, 112, Peckham-road, Peckham, London, S.E.15. Applications invited for post of JUNIOR ASSISTANT MEDICAL OFFICER. Applicants should be Male and single. Salary £400 p.a., usual emoluments.

Apply, with testimonials, to Physician-Superintendent.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Resident MEDICAL OFFICER (B1), Male or Female, vacant 1st March, 1948. Salary £350 p.a.

Applications, stating age, qualifications, with copies of 3 recent testimonials and a photograph, by 31st January, 1948, to: R. G. HEPPELL, House Governor.

MILLER GENERAL HOSPITAL, Greenwich High-road, S.E.10. CASUALTY OFFICER (B1), non-resident, to commence 1st February, 1948. Salary £350, plus £100 p.a. board allowance.

Form of application can be obtained from the Secretary and must be returned by 7th January, 1948.

11th December, 1947.

VICTORIA HOSPITAL FOR CHILDREN, Tite-street, Chelsea, S.W.3. HOUSE PHYSICIAN (A), Male or Female, vacant 1st February next. Appointment for 6 months. Salary £150 p.a.

Applications, with copies of 1–3 testimonials, should reach the Secretary by first post 7th January, 1948.

D. ST. JOHN BAMFORD, Secretary.

ST. GEORGE'S HOSPITAL, S.W.1. Applications invited for post of RESIDENT MEDICAL OFFICER (B2), Male or Female, to the Psychiatric Wards at Atkinson Morley Hospital, Wimbledon. Appointment for 6 months, commencing on or about 14th February, 1948. Salary £200 p.a. Demobilised officers invited to apply.

Applications, with copies of 2 testimonials, by 16th January, 1948, to: P. H. CONSTABLE, House Governor.

ST. GEORGE'S HOSPITAL, S.W.1. Applications invited for post of RESIDENT OBSTETRIC ASSISTANT (B2). Experience in anæsthetics desirable. Appointment for 6 months, commencing 1st March, 1948. Salary £200 p.a. Demobilised officers and R practitioners holding A posts invited to apply.

Applications, with copies of 2 testimonials, by 23rd January, 1948, to: P. H. CONSTABLE, House Governor.

ST. GEORGE'S HOSPITAL, S.W.1. Applications invited for post of JUNIOR MEDICAL OFFICER (B2) in the Neurosurgical Dept. of the Hospital's Atkinson Morley Branch at Wimbledon. 6 months' appointment, resident, with salary of £200 p.a., duties to commence early in January.

Further information can be obtained from undersigned, to whom applications, with copies of 2 testimonials, should be sent by 7th January, 1948. P. H. CONSTABLE, House Governor.

ST. MARY'S HOSPITAL, London, W.2. Applications invited for post of MEDICAL REGISTRAR (B1). Candidates must be Fellows, Members, or Licentiates of the Royal College of Physicians, or graduates in medicine of a university in the British Empire. Appointment for a first period of 12 months from 1st February, 1948. Salary £400 p.a.

Applications, stating nationality, permanent address, date of birth, qualifications with dates, and details of previous appointments, with copies of 1–3 testimonials, should reach undersigned by 7th January, 1948.

10th December, 1947. W. PARKES, House Governor.

ST. MARY'S HOSPITAL, London, W.2. Applications invited for post of Whole-time DIRECTOR of the Radiotherapy Dept., with full staff status. Salary £1500 p.a. The holder has the right to treat private patients at the Hospital, referred by Members of the Consulting and Honorary Medical Staff, subject to arrangements made by the Board of Management. Appointment for 5 years, at the expiration of which time the holder will be eligible for re-election.

Applications (4 copies), with copies of 1–3 recent testimonials, should reach undersigned by 15th January, 1948.

9th December, 1947. W. PARKES, House Governor.

ST. MARY'S HOSPITAL, London, W.2. Applications invited for post of ASSISTANT DIRECTOR of the Diagnostic Radiological Dept., with full staff status. Appointee required to take part in private practice associated with the Lindo (Private) Wing, subject to arrangements made by the Board of Management. Appointment for 5 years, at the expiration of which time the holder will be eligible for re-election. Attendance at the Hospital required on at least 5 half-days weekly.

Applications (4 copies), with copies of 1–3 recent testimonials, should reach undersigned by 15th January, 1948.

9th December, 1947. W. PARKES, House Governor.

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.5. The Committee of Management invite applications for post of Full-time ASSISTANT LECTURER IN OPERATIVE DENTAL SURGERY. Salary £750 p.a. The Assistant Lecturer will come under the provisions of the F.S.S.U. Candidates must be duly registered.

Applications (12 copies), giving the names of 3 referees, should be sent before 16th January, 1948, to undersigned, from whom particulars of the duties may be obtained.

S. W. BARNES, House Governor.

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.5. The Committee of Management invite applications, after candidates have communicated with the House Governor, for post of ASSISTANT SURGEON to the Urological Dept. Candidates must be Fellows of the Royal College of Surgeons of England.

Applications (12 copies), giving the names of 3 referees, should be sent before 16th January, 1948, to—

S. W. BARNES, House Governor.

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.5. The Committee of Management invite applications for post of CLINICAL ASSISTANT in the Dental X-ray Dept. for the year 1948. Candidates must be duly registered.

Applications (12 copies), giving the names of 3 referees, should be sent before 16th January, 1948, to undersigned, from whom particulars of the duties may be obtained.

S. W. BARNES, House Governor.

KING'S COLLEGE HOSPITAL, Denmark Hill, S.E.5. The Committee of Management invite applications for post of CLINICAL ASSISTANT in the Orthodontic Dept. for the year 1948. Candidates must be duly registered.

Applications (12 copies), giving the names of 3 referees, should be sent before 16th January, 1948, to undersigned, from whom particulars of the duties may be obtained.

S. W. BARNES, House Governor.

ST. THOMAS'S HOSPITAL, S.E.1. Applications invited for post of HONORARY SURGEON to the Hospital. One of the present Surgeons to Outpatients will be a candidate and, if he is appointed, there will be a vacancy for an HONORARY SURGEON to Outpatients. Candidates must be Fellows of the Royal College of Surgeons.

Applications (20 copies), which should include details of age, qualifications, and experience, and the names and addresses of 3 referees, should be sent by 15th January, 1948, to the Clerk of the Governors, to whom any inquiries should be addressed.

BOLINGBROKE HOSPITAL, Wandsworth Common, S.W.11. HOUSE SURGEON (A), vacant 1st January, 1948. Appointment for 6 months. Salary £120 p.a., full residential emoluments.

Applications, stating age, qualifications, and experience, with copies of 3 recent testimonials, as soon as possible to the Secretary-Superintendent.

THE ROYAL MASONIC HOSPITAL, Ravenscourt Park, London, W.6. RESIDENT MEDICAL OFFICER (B1), Male, vacant beginning of January. Applicants should have held house appointments and have had medical experience. Salary £350 p.a. with full board, lodging, and laundry. If a candidate holds the diploma of M.R.C.P., the salary attached to the post may be at a higher rate.

Please apply in writing to the Joint Honorary Secretaries at the Royal Masonic Hospital.

GUY'S HOSPITAL MEDICAL SCHOOL. Demonstrator (part time) in Pharmacology Dept., duties to commence as soon as possible. Salary £300 p.a.

Forms of application obtainable from the Dean, Guy's Hospital Medical School, S.E.1, and should be returned, with names of 3 referees, by 31st December, 1947.

GUY'S HOSPITAL, S.E.1 Applications invited from Service candidates and others for the following appointments:—

ASSISTANT PHYSICIAN.

ASSISTANT OBSTETRIC SURGEON.

Copies of standing orders can be obtained from the Superintendent, to whom letters of application (20 copies), with names of 3 referees, should be submitted by 31st January, 1948, and from whom any further information can be obtained.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.1. Applications invited for appointment of HONORARY ASSISTANT SURGEON to the Ophthalmic Dept. Candidates must possess the qualifications of (Eng.) F.R.C.S. or F.R.C.S. (Oph.).

Applications, with copies of 3 recent testimonials and a photograph, to undersigned by 24th January, 1948. Applicants are also required to call on each member of the Honorary Medical Staff (approximately 40) for interview, leaving a copy of application and testimonials.

R. G. HEPPELL, House Governor.

ST. MARY'S HOSPITAL FOR WOMEN AND CHILDREN, Plaistow, E.13. (General Hospital, no Maternity.) RESIDENT PHYSICIAN (B2), vacant 1st January, 1948. Salary £250 p.a., full residential emoluments. To R practitioners appointment limited to 6 months.

Applications, with copies of recent testimonials, to the Secretary.

THE WILLESDEN GENERAL HOSPITAL, Harlesden-road, N.W.10. RESIDENT HOUSE SURGEON (A) and RESIDENT HOUSE PHYSICIAN (A). Salary £150 p.a., plus full residential emoluments. Appointments for 6 month from 1st February, 1948.

Applications, stating age, qualifications with dates, nationality, and present post, with copies of 3 recent testimonials, by 10th January, 1948, to: J. N. DRAKE, Secretary.

THE PRINCESS BEATRICE HOSPITAL, Earl's Court, S.W.5. (General Hospital—92 Beds.) OBSTETRIC HOUSE SURGEON (B2), Male or Female, vacant 31st January, 1948. Obstetric experience essential. To R practitioners appointment for 6 months. Salary £200 p.a., full residential emoluments.

Applications, stating age, qualifications with dates, and nationality, and accompanied by copies of 1–3 testimonials, to the House Governor by 17th January, 1948.

BELGRAVE HOSPITAL FOR CHILDREN, 1, Clapham-road, S.W.9. HOUSE PHYSICIAN (B2), Male or Female. Appointment for 6 months, commencing 1st February, 1948. Salary £150 p.a., full residential emoluments. Demobilised Medical Officers may apply for the higher rate of salary under the Government Scheme for Postgraduate Education.

Applications, stating age, with copies of 3 testimonials, should reach undersigned by 7th January, 1948.

A. L. FELL, Secretary.

LONDON CHEST HOSPITAL, E.2. Applications invited for 3 vacancies as Part-time OUTPATIENT MEDICAL REGISTRARS, each to attend 3 sessions a week, including one Refill Clinic. Salary £300 p.a.

Applications, with copies of 3 testimonials, should reach undersigned by 17th January, 1948.

THOMAS BROWN, Secretary.

CONNAUGHT HOSPITAL, E.17. (Voluntary Hospital—120 Beds.) HOUSE SURGEON (B2), Male, vacant 1st January, 1948. Salary £200 p.a., board-residence.

Applications should be sent immediately to—

R. HALTON HARRISON, General Secretary.

NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W.1. Applications invited from registered medical practitioners for post of Full-time PATHOLOGIST at the above Hospital. Applicants should be exclusively engaged in the practice of pathology, with wide training in clinical pathology and morbid anatomy. Non-resident post with a commencing salary of £1100, the successful candidate being permitted to engage in private practice, restricted to the private wing of the Hospital, at present 23 Beds.

Applications should reach the Secretary by 8th January, 1948.

BEARSTED MEMORIAL HOSPITAL, London, N.16. THE PRINCE OF WALES'S GENERAL HOSPITAL, London, N.15. Applications invited for appointment of Whole-time REGISTRAR to the Gynæcological and Obstetric Depts. Applicants must be Fellows of one of the Royal Colleges, preferably Royal College of Surgeons of England, and must be M.R.C.O.G. Appointment for 6 months. Salary £750 p.a.

Applications, stating age, qualifications, and experience, with recent testimonials, by 24th January, 1948, to—

J. C. BURDETT, Director and House Governor.

The Prince of Wales's General Hospital.

LONDON COUNTY COUNCIL. Medical practitioners required for the under-mentioned positions:—

(1) ASSISTANT MEDICAL OFFICERS, Class I. (B1). Salary £455 a year, rising by £25 to £555 a year, plus appropriate cost-of-living addition. Appointment will not exceed 4 years unless the officer's name is placed on promotion list.

Hospital	*Duties*
Paddington Hospital, Harrow-road, W.9.	Casualty Officer.
St. Alfege's Hospital, 48, Vanbrugh Hill, Greenwich, S.E.10 (2 positions).	(*a*) Medical. (*b*) Traumatic and Orthopædic Surgeon.
St. George-in-the-East Hospital, Raine-street, Wapping, E.1.	Medical.
Hackney Hospital, High-street, Homerton, E.9.	Medical.
Lewisham Hospital, Lewisham, S.E.13.	Surgical.

(2) ASSISTANT MEDICAL OFFICERS, Class II (B2). Salary £325 a year, plus appropriate cost-of-living addition. Appointment for 1 year only in first instance, renewable for second year under certain conditions. To R practitioners limited to 6 months.

Hospital	*Duties*
St. Alfege's Hospital, 48, Vanbrugh Hill, Greenwich, S.E.10.	Casualty Officer.
St. George-in-the-East Hospital, Raine-street, Wapping, E.1.	Casualty Officer.
Lambeth Hospital, Brook-drive, Kennington-road, S.E.11 (2 positions).	(*a*) Obstetrics. (*b*) General medical.
St. Mary, Islington, Hospital, Highgate Hill, N.19.	Obstetrics.
St. Giles' Hospital, St. Giles'-road, Camberwell, S.E.5.	Obstetrics.
Queen Mary's Hospital for Children, Carshalton, Surrey.	Surgical.
Bethnal Green Hospital, Cambridge Heath-road, E.2.	Medical and anæsthetics.
Mile End Hospital, Bancroft-road, Mile End, E.1.	General medical.

All the above positions are with board, lodging and washing. Married quarters are not available, but in certain instances non-residence with the appropriate allowance is permitted.

Application forms, obtainable from M.O.H., S.D.2, County Hall, S.E.1 (stamped foolscap envelope necessary), must be returned by 19th January, 1948. Canvassing disqualifies. (3886.)

LONDON COUNTY COUNCIL. Laboratory Technicians required at (1) the Epsom Pathological Laboratory, West Park Hospital, Epsom, Surrey, and (2) Horton Hospital, Epsom, Surrey. Candidates must have good experience in general clinical laboratory techniques and histology. Salary scale £250, rising to £325 a year, plus interim increase of £50 a year pending review of salary scale, and cost-of-living addition, at present £78 a year (Men), £63–£72 a year (Women).

For application form, returnable by 30th January, 1948, send stamped addressed foolscap envelope to M.O.H. (MHS/I), County Hall, Westminster Bridge, S.E.1. (3851.)

LONDON COUNTY COUNCIL. Assistant Pathologist (£900- £50–£1100) or JUNIOR ASSISTANT PATHOLOGISTS (£650–£25–£725) at the Group Laboratories at Lambeth Hospital, S.E.11, and the North Western Hospital, N.W.3. Positions are non-resident. Salaries subject to cost-of-living addition. Persons selected for appointment as Assistant Pathologist may be appointed at a commencing salary above the minimum. Applicants for appointment as Junior Assistant Pathologist need not have had full experience in pathological work, but for the position of Assistant Pathologist considerable experience in pathological work is required. Suitably qualified R practitioners holding B2 or B1 posts may apply. The Central Medical War Committee are prepared to consider the deferment of a holder of a B1 post selected for appointment.

Application forms may be obtained from the M.O.H. (S.D.2), The County Hall, S.E.1 (stamped addressed foolscap envelope), and should be returned by first post 5th January, 1948. (3794.)

HAMPSTEAD GENERAL HOSPITAL, The Green, N.W.3. The Council of Management invites applications for the office of HONORARY PSYCHIATRIST from candidates with experience of general psychiatry engaged solely in that specialty in consulting practice.

Applications, giving full details, with the names of 3 referees, must reach undersigned by 6th January, 1948, from whom full particulars may be obtained in the first instance.

By Order of the Council of Management.

KENNETH A. F. MILES, House Governor.

HAMPSTEAD GENERAL HOSPITAL, The Green, N.W.3. Resident CASUALTY SURGICAL OFFICER (B2), Male or Female, at the Outpatient Dept., Bayham-street, N.W.1, vacant 1st February, 1948, tenable for 6 months. Salary £200 p.a., with board, lodging, and laundry.

Applications on the prescribed form, with copies of 3 recent testimonials, to be returned by 8th January to—

KENNETH A. F. MILES, House Governor.

THE ELIZABETH GARRETT ANDERSON HOSPITAL, Euston-road, N.W.1. HOUSE SURGEON (A), Female, for Special Depts. and anæsthetic duties, and charge of branch at Rosa Morison House, Barnet. Post vacant 1st February. Appointment for 6 months. Salary £100 p.a., with full residential emoluments.

Applications, with copies of 3 recent testimonials, to the Secretary by 30th December.

MEMORIAL HOSPITAL, Shooters Hill, London, S.E.18. (General Hospital—130 Beds.) The Board of Management invites applications for post of HONORARY PHYSICIAN in charge of the Physiotherapy Dept.

Applications and full particulars, with copies of 3 recent testimonials, to the House Governor as soon as possible.

HOSPITAL OF ST. JOHN AND ST. ELIZABETH, 60, Grove End-road, N.W.8. HOUSE PHYSICIAN (A), Male, vacant early January, 1948. Appointment for 6 months. Salary £150 p.a., full residential emoluments.

Applications should reach undersigned by 29th December, 1947, with copies of 3 testimonials.

F. DUDLEY HOBBS, M.A., Secretary.

THE MARIE CURIE HOSPITAL (Centre for Radiotherapy), 66, Fitzjohn's-avenue, N.W.3. Applications invited from registered medical Women practitioners for post of HOUSE SURGEON, duties to commence as soon as possible. Salary £150 p.a., full residential emoluments.

Applications to the Secretary.

THE NATIONAL HOSPITAL FOR NERVOUS DISEASES, Queen-square, London, W.C.1. PSYCHIATRIC REGISTRAR (non-resident). Appointment for 1 year in the first instance. Salary £650 p.a., full-time post. Doctors serving in H.M. Forces are invited to apply. Applications by 31st December, 1947, to: H. EWART MITCHELL, Secretary.

COUNTY BOROUGH OF WEST HAM. Forest Gate Hospital. RESIDENT SENIOR ASSISTANT MEDICAL OFFICER AND ASSISTANT OBSTETRICIAN (B1), Male or Female. Salary £682 10s. p.a., annual increments £25 to maximum £757 10s. p.a., plus temporary cost-of-living bonus, with full residential emoluments. Salary is inclusive and all fees received, from whatever source must be paid to the Council. Candidates should have had, in addition to a general hospital appointment, an appointment in a hospital where they have had charge of maternity beds.

Further particulars from M.O.H., 225, Romford-road, West Ham, E.7, from whom application forms can be obtained, to be returned by 1st January, 1948. E. E. KING, Town Clerk.

West Ham Town Hall, Stratford, London, E.15,
6th December, 1947.

COUNTY BOROUGH OF WEST HAM. Senior Assistant Medical OFFICER. Duties mainly concerned with the Council's maternity and child welfare service, but the person appointed must be prepared to undertake duties in any section of the health services under the direction of the M.O.H. Salary £900, by biennial increments of £50 to maximum of £1000 p.a., plus temporary cost-of-living bonus and car allowance of £50 p.a. Applicants must have had previous experience in maternity and child welfare work, and possess a D.P.H.; the D.C.H. an advantage.

Form of application, together with list of duties, can be obtained from M.O.H., 223/225, Romford-road, West Ham, E.7, and must be returned to him by 8th January, 1948.

West Ham Town Hall, Stratford, E.15, E. E. KING,
10th December, 1947. Town Clerk.

MIDDLESEX COUNTY HOSPITAL. Ashford County Hospital, ASHFORD, MIDDLESEX.

(1) HOUSE SURGEON (A, resident, Male) for general surgical wards, vacant now.

(2) HOUSE PHYSICIAN (A, resident, Male) for general medical duties, vacant 11th January, 1948.

Salary each case £150 p.a., plus any temporary bonus (now £30 p.a., cash), board, lodging, laundry. 6 months' appointment.

Applications, stating age, qualifications, experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital immediately (quoting D.245.L.). No forms.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, S.W.1.

MIDDLESEX COUNTY COUNCIL. Redhill County Hospital, EDGWARE, MIDDLESEX, and ANNEXE at BUSHEY HEATH, HERTS.

(1) SENIOR OBSTETRIC HOUSE SURGEON (B2, resident) required. Salary £250 p.a., plus any temporary bonus (now £30 p.a., cash), board, lodging, laundry. Post recognised for D.R.C.O.G. and M.R.C.O.G.

(2) OBSTETRIC HOUSE SURGEON (A, resident).

(3) GYNÆCOLOGICAL HOUSE SURGEON (A, resident).

(2) and (3), salary £150 p.a., plus any temporary bonus (now £30 p.a., cash), board, lodging, laundry. Posts approved for D.R.C.O.G.

All 6 months' appointments, subject to medical examination. Vacant 1st February, 1948.

Applications, stating age, qualifications, experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital by 3rd January, 1948 (quoting D.246.L.). No forms.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, S.W.1.

MIDDLESEX COUNTY COUNCIL. Napsbury Mental Hospital, near ST. ALBANS, HERTS. JUNIOR PHYSICIAN required. Progressive Hospital, with staff of 13 whole-time Medical Officers. Good facilities for D.P.M. study. Salary £600, rising by £25 to £700 p.a. If D.P.M. obtained a further £50 payable. Charges for board, lodging, &c. R practitioners holding B1 appointments and ineligible for H.M. Forces may apply. Established, pensionable, subject to medical examination.

Applications, with copies of 2 recent testimonials, to Medical Superintendent of Hospital immediately (quoting D.206.L.).

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, S.W.1.

MIDDLESEX COUNTY COUNCIL. Central Middlesex County HOSPITAL, Park Royal, N.W.10. OBSTETRIC AND GYNÆCOLOGY DEPARTMENT. CHIEF ASSISTANT required. Experienced, with higher degree or diploma in obstetrics and gynæcology. Maternity Unit 58 Beds, Gynæcological Unit 50 Beds. General scope of duties arranged by Medical Director and Senior Obstetrician may include teaching. Inclusive salary £750–£50–£950 p.a., plus any temporary bonus (now £60 p.a.). Appointment renewable annually up to 3 years, with possible extension. First increment payable from 1st April following completion of 6 months' service. Non-resident, whole time, subject to medical examination.

Applications, stating age, qualifications, experience, with copies of up to 3 recent testimonials, to undersigned by 10th January, 1948 (quoting D.279.L.). No forms.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, S.W.1.

MIDDLESEX COUNTY COUNCIL. Casualty Officer (B2, resident) required at Central Middlesex County Hospital, Park Royal, N.W.10. Registered medical practitioner, preferably one who has held hospital appointments. Salary £350 p.a., plus any temporary bonus (now £30 p.a., cash); board, lodging, laundry. Whole-time duties such as Council may require under supervision of Medical Director. Appointment, subject to medical examination, is for 6/12 months (except for R practitioners).

Applications, stating age, nationality, qualifications, experience, with copies of up to 3 recent testimonials, to Medical Director of Hospital by 10th January, 1948 (quoting D.281.L.). No forms. C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, S.W.1.

MIDDLESEX COUNTY COUNCIL. North Middlesex County HOSPITAL, Edmonton, N.18.

(1) OUTPATIENT MEDICAL OFFICER (B2, resident) required. Duties medical, surgical, and casualty cases, with minor surgery. Salary £350 p.a., plus any temporary bonus (now £30 p.a., cash).

(2) OBSTETRIC HOUSE SURGEON (B2, resident). Salary £250 p.a., plus any temporary bonus (now £30 p.a., cash). Must have held house appointments in either medicine or surgery. Hospital has large Obstetric and Gynæcological Dept. Post approved for R.C.O.G.

(3) HOUSE SURGEON (A, resident). Salary £150 p.a., plus any temporary bonus (now £30 p.a., cash).

(1), (2), and (3) board, lodging, laundry; (2) and (3) whole-time duties such as Council may require under supervision of Medical Director. Vacant 1st February, 1948. All 6 months' appointments.

Applications, stating age, nationality, qualifications, experience, with copies of recent testimonials, to Medical Director of Hospital; (1) by 6th January, 1948; (2) and (3) by 10th January, 1948 (quoting D.282.L.). No forms.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, S.W.1.

MIDDLESEX COUNTY COUNCIL. Springfield Mental Hospital, Wandsworth, S.W.17. (Large Hospital with every modern method of treatment.) CHIEF PHYSICIAN required (not post of Deputy Medical Superintendent). D.P.M., higher medical qualifications, and considerable experience in mental hospital and clinic work essential. Salary £1000 p.a.–£40–£1200, plus any temporary bonus (now £60 p.a.). R practitioners holding B1 appointments and ineligible for H.M. Forces may apply. Established and pensionable, subject to medical examination. Unfurnished accommodation provided rent free. No other emoluments.

Application forms from Medical Superintendent of Hospital (quoting D.243.L.).

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, S.W.1.

MIDDLESEX COUNTY COUNCIL. Obstetric House Surgeon (A) required at Chase Farm Hospital, Enfield, Middlesex. Salary £150 p.a., plus any temporary bonus (now £30 p.a., cash); board, lodging, laundry. 6 months' appointment. Vacant now.

Applications, stating age, qualifications, experience, with copies of up to 3 recent testimonials, to Medical Director immediately (quoting D.280.L.). No forms.

C. W. RADCLIFFE, Clerk of the County Council.

Middlesex Guildhall, S.W.1.

ESSEX COUNTY COUNCIL AND ROMFORD BOROUGH COUNCIL. Combined appointments of ASSISTANT COUNTY MEDICAL OFFICER OF HEALTH AND ASSISTANT MEDICAL OFFICER OF HEALTH. Preference given to applicants possessing a Diploma or Certificate in Public Health. Borough is an Excepted District under the Education Act, 1944. Appointee required to devote whole-time service to the combined appointments. Duties of County Council appointment will be chiefly in relation to the school health service and the duties of the Borough Council appointment will include those relating to maternity and child welfare and other public health work. As respects both appointments the person appointed will, however, be required to undertake such other duties as may be necessary. Salary for combined appointments £750 a year, annual increments £25 to £950 a year, plus bonus and travelling allowance as from time to time decided. The combined appointments, which will not be severable, will be held during the pleasure of the respective employing authorities and will be determinable by the officer by not less than 3 months' notice in writing. Appointment subject to provisions of Local Government Superannuation Act, 1937, and selected candidate required to pass medical examination.

Application forms may be obtained from the Clerk of the County Council, to whom they should be returned, with copies of 1–3 recent testimonials, as soon as possible. Canvassing, directly or indirectly, will disqualify.

JOHN E. LIGHTBURN,
County Hall, Chelmsford. Clerk of the County Council.
J. TWINN, Town Clerk.

Town Hall, Romford, 12th December, 1947.

SURREY COUNTY COUNCIL. Assistant Chest Physician. Candidates should possess a higher medical qualification and have had wide experience in the diagnosis and treatment of tuberculosis and other chest conditions. Main duties those of Medical Officer in charge of the Mass-radiography Unit, and in addition the person appointed will be given a small dispensary area. Appointee required to devote his whole time to his official duties, and to work under the administrative control of the County Medical Officer of Health. Salary £950 by £50 p.a. to £1150, both inclusive, the starting-point in the grade being fixed according to qualifications and experience. Appointment is on Council's permanent staff and subject to satisfactory medical examination, to 3 months' notice on either side, and to the Local Government Superannuation Act, 1937.

Applications, stating age, qualifications, and experience, with copies of 1–3 recent testimonials, to the County Medical Officer of Health, County Hall, Kingston-upon-Thames.

DUDLEY AUKLAND, Clerk of the Council.

SURREY COUNTY COUNCIL. Kingston County Hospital, Wolverton-avenue, KINGSTON-ON-THAMES. (450 Beds.) ASSISTANT MEDICAL OFFICER (B1) (anæsthetics). Candidates must have had experience in house appointments and anæsthetics. Salary £350, £400, or £450, according to qualifications and experience, plus bonus and full residential emoluments. Appointment for 6 months, renewable for a second period of 6 months. Duties mainly anæsthetics but they may also include other duties as required by the Medical Superintendent. Members of H.M. Forces may apply.

Applications by letter, stating age, qualifications, and experience, with a copy of 1–3 recent testimonials, should reach the Medical Superintendent of the Hospital by 3rd January, 1948.

SURREY COUNTY COUNCIL. Farnham County Hospital, Hale-road, FARNHAM. (210 Beds.) ASSISTANT SURGEON (full time). Candidates must possess a higher surgical qualification and have considerable experience of general surgery. Commencing salary at a point according to qualifications and experience on the scale £950 p.a. by annual increments of £50 to £1150 p.a. inclusive. Appointment for period not exceeding 7 years. Successful candidate required to reside within reasonable distance of the Hospital. Members of H.M. Forces may apply.

Applications, stating age, qualifications, and experience, with 1–3 recent testimonials (copies) and/or the names of 3 referees, should reach the County Medical Officer, County Hall, Kingston-upon-Thames, by 10th January, 1948.

ESSEX COUNTY COUNCIL. Ophthalmic Specialists. Applications invited from registered medical practitioners for following appointments. Applicants should have special experience in all branches of ophthalmology and should be in possession of the D.O.M.S.

SENIOR ASSISTANT COUNTY MEDICAL OFFICER for ophthalmic work. £900 a year, annual increments of £50 to £1200 a year.

ASSISTANT COUNTY MEDICAL OFFICER for ophthalmic work. £750 a year, annual increments of £25 to £950 a year.

Bonus is now paid in addition to above basic remuneration.

Applications (on the prescribed form obtainable from the County Medical Officer of Health at the under-mentioned address), accompanied by non-returnable copies of 3 recent testimonials, should be received by me at County Hall, Chelmsford, by 19th January, 1948. Canvassing, whether directly or indirectly, will disqualify a candidate.

JOHN E. LIGHTBURN, Clerk of the County Council.

County Hall, Chelmsford, 12th December, 1947.

KENT COUNTY COUNCIL. County Hospital, Farnborough, near BROMLEY. (935 Beds.) Applications invited from suitably qualified registered medical practitioners (Male or Female) for following resident appointments:—

JUNIOR ASSISTANT MEDICAL OFFICER (B2) for medical duties.
JUNIOR ASSISTANT MEDICAL OFFICER (B2) for surgical duties.
JUNIOR ASSISTANT MEDICAL OFFICER (B2) for paediatric duties.
JUNIOR ASSISTANT MEDICAL OFFICERS (2) (B2) for obstetric duties.
JUNIOR ASSISTANT MEDICAL OFFICERS (2) (A) for medical duties.
JUNIOR ASSISTANT MEDICAL OFFICERS (2) (A) for surgical duties.

Salary £200 a year, full residential emoluments, plus cost-of-living allowance. To R practitioners B2 appointments limited to 6 months; otherwise not exceeding 1 year. A appointments will be for 6 months only to R practitioners. Medical examination necessary and superannuation can be arranged.

Applications, stating age, qualifications, experience, and the names and addresses of 2 responsible persons as reference to professional ability and character, should be addressed to Medical Superintendent at the Hospital as soon as possible.

W. L. PLATTS, Clerk of the County Council.

County Hall, Maidstone, 10th December, 1947.

KENT COUNTY COUNCIL. County Hospitals, Chatham and DARTFORD. Applications are invited from practitioners with appropriate experience for appointment of ASSISTANT RADIOLOGIST. Salary scale £744 a year, annual increments £50 to £894 a year, with a cash living-out allowance of £120 a year, plus cost-of-living allowance. Commencing point in the scale will be fixed according to qualifications and experience. Post subject to provisions of Local Government Superannuation Act, 1937, and successful candidate required to pass medical examination.

Applications, stating age, qualifications, experience, nationality, and the names and addresses of 2 persons as reference to professional ability and character, to the County Medical Officer, County Hall, Maidstone, by 10th January, 1948.

W. L. PLATTS, Clerk of the County Council.

County Hall, Maidstone, 10th December, 1947.

THE BROMLEY AND DISTRICT HOSPITAL, Cromwell-avenue, BROMLEY, KENT (215 Beds), invites applications for post of SENIOR HOUSE SURGEON (B1). Commencing salary £350 p.a., full residential emoluments.

Applicants should write, stating age, qualifications, and experience, and enclose copies of recent testimonials, to the House Governor.

THE ROYAL HOSPITAL, Wolverhampton. (Incorporated under Royal Charter.) (310 Beds.) CASUALTY OFFICER (B2), Male, vacant now. Salary £250 p.a., full residential emoluments. To R practitioners appointment limited to 6 months.

Applications to: W. COCKBURN, House Governor.

HERTFORDSHIRE COUNTY COUNCIL. Lister Emergency HOSPITAL, HITCHIN. (350 Beds.) HOUSE PHYSICIAN (A), vacant 6th January, 1948. Salary £150 p.a., residential emoluments. To R practitioners appointment for 6 months.

Applications, with copies of 3 recent testimonials, immediately to: P. J. W. MILLS, Medical Superintendent.

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CITY OF PORTSMOUTH. Deputy Medical Officer of Health AND DEPUTY SCHOOL MEDICAL OFFICER to act under the direction of the Medical Officer of Health and School Medical Officer and to perform such duties as may be required of him from time to time by the Council or Medical Officer of Health. Salary £1000 p.a., annual increments £50 to £1250, plus cost-of-living bonus. Applicants must hold the D.P.H. or similar qualification and have had experience in the administrative work of a P.H. Dept. Preference given to those possessing special knowledge and experience in school medical work and the diseases of children. Appointment terminable by 3 months' notice on either side.

Application forms, with further particulars of the appointment, may be obtained from the M.O.H., Municipal Offices, 1, Western-parade, Southsea, to whom application forms must be returned by 4th January. Canvassing, directly or indirectly, will disqualify. V. BLANCHARD, Town Clerk.

City Council Chambers, 1, Clarence-parade, Southsea.

CITY OF PORTSMOUTH. Saint Mary's Hospital. (1085 Beds.) JUNIOR GENERAL ASSISTANT RESIDENT MEDICAL OFFICER (A), Male. Salary £250 p.a., with residential emoluments valued at £150 p.a., and temporary cost-of-living bonus at present £29 18s. p.a. To R practitioners appointment for 6 months; otherwise 12 months.

Applications, in writing, to the M.O.H., P.H. Dept., Municipal Offices, 1, Western-parade, Southsea, by 3rd January, 1948.

V. BLANCHARD, Town Clerk.

City Council Chambers, 1, Clarence-parade, Southsea,
6th December, 1947.

CITY OF PORTSMOUTH. Public Health Department. Applications invited from medical practitioners, who must be of recognised consultant and specialist status, for appointment of Part-time VISITING PHYSICIAN at Saint Mary's Hospital (1085 Beds). Appointment includes service at any other hospital under the control of the City Council and in the first instance will be for the period from 1st February, 1948, to 31st March, 1949, terminable by 3 months' notice on either side and subject to any future amendment under the provisions of the National Health Service Act. Salary £440 p.a., for 2 regular sessions of approximately 2 hours each per week, 1 of which will be devoted to outpatients. Any extra or emergency sessions required will be paid for at rate of £4 4s. if of a duration of $1^1/_2$–$2^1/_2$ hours, and £2 12s. 6d. if of a duration of 1 hour or less.

Application forms, with details and conditions of service, may be obtained from, and must be returned to, the M.O.H., Municipal Offices, 1, Western-parade, Southsea, by 3rd January, 1948. Canvassing, directly or indirectly, will be deemed a disqualification. V. BLANCHARD, Town Clerk.

City Council Chambers, 1, Clarence-parade, Southsea,
6th December, 1947.

ROYAL HAMPSHIRE COUNTY HOSPITAL, Winchester. (330 Beds.) HOUSE SURGEON (A), Male or Female, vacant 12th February, 1948. Salary £175 p.a., full residential emoluments. To R practitioners appointment for 6 months.

Applications should be sent to—

R. MORRISON SMITH, Superintendent and Secretary.

17th December, 1947.

LYMINGTON AND DISTRICT HOSPITAL, Hampshire. (107 Beds.) HOUSE SURGEON (A). Appointment for 6 months. Salary £150–£200 p.a., according to experience, full residential emoluments.

Applications, stating age, qualifications, and nationality, with copies of 3 recent testimonials, immediately to—

N. P. WOOD, Secretary.

COUNTY BOROUGH OF MIDDLESBROUGH. Hemlington EMERGENCY HOSPITAL. (200 Beds.) ASSISTANT RESIDENT MEDICAL OFFICER (B2). Duties mainly surgical, but successful candidate required to assist in the administration of anæsthetics and general duties in the Hospital. Salary £200 p.a., plus cost-of-living bonus, with full residential emoluments. Successful candidate required to pass medical examination. To R practitioners appointment limited to 6 months; otherwise 12 months.

Applications to the M.O.H., Municipal Buildings, Middlesbrough, by 7th January, 1948. E. C. PARR, Town Clerk.

Municipal Buildings, Middlesbrough, 9th December, 1947.

COUNTY MENTAL HOSPITAL, Lancaster. (3000 Beds.) ASSISTANT MEDICAL OFFICER (B1). Preference given to candidates with previous psychiatric experience who have held a house appointment. Salary £465 p.a., annual increments £30 to £555 p.a., and if unmarried with residential emoluments valued at £200 p.a. Variable cost-of-living bonus payable in addition which at present is £59 16s. p.a., half of which is paid in cash, the other half added to the value of the emoluments. A further £50 p.a. payable to holders of D.P.M. An unfurnished flat is available for a married man, in which case the gross salary would be paid in cash less £60 p.a. (emolument for flat). Appointment subject to provisions of the Asylum Officers Superannuation Act, 1909, and conditional on the candidate passing a medical examination.

Applications, stating age, nationality, qualifications, and experience, with names of 2 referees, immediately to the Medical Superintendent.

WEST SUFFOLK GENERAL HOSPITAL, Bury St. Edmunds. (335 Beds.)

(*a*) HOUSE SURGEON (B2) with special responsibility for maternity and gynæcology, vacant 16th January, 1948. Salary £200 p.a.

(*b*) HOUSE SURGEON (A) with special responsibility for anæsthetics and ophthalmic cases, vacant 1st January, 1948. Salary £175 p.a.

(*c*) CASUALTY OFFICER (A) with special responsibility for orthopædics, vacant immediately. Salary £175 p.a.

To R practitioners appointments limited to 6 months.

Applications, stating age, nationality, qualifications, with copies of 3 recent testimonials, to the Secretary, E. E. HARDWICKE, F.H.A.

CITY OF SHEFFIELD. Public Health Department. Applications invited from clinical pathologists with experience in bacteriology who have served with H.M. Forces for the position of ASSISTANT CLINICAL PATHOLOGIST (non-resident) at the Public Health Laboratory at the City General Hospital. Appointment will be made under the terms of Ministry of Health Circular 202/46. Salary £900 p.a., with bonus, in addition, at present £59 16s. p.a.

Applications, with copies of 3 recent testimonials, to—
LLYWELYN ROBERTS, Medical Officer of Health.
Town Hall, Sheffield, 1.

ROYAL SHEFFIELD INFIRMARY AND HOSPITAL. Department OF RADIOLOGY. Applications invited for post of Full-time RADIOLOGICAL REGISTRAR (Diagnostic). Candidates must possess a diploma or special qualifications in diagnostic radiology and have had previous experience. Commencing salary £1000 p.a.

Applications, with copies of 3 recent testimonials, immediately to the General Superintendent, Royal Sheffield Infirmary and Hospital, Royal Infirmary, Sheffield, 6.

ROYAL SHEFFIELD INFIRMARY AND HOSPITAL. Royal INFIRMARY. FIRST ASSISTANT (B1), Male or Female, to the Ophthalmic Dept. Candidates must have held house appointments and possess a diploma or special qualifications in ophthalmology. Salary £650 p.a., non-resident.

Applications immediately to: General Superintendent, Royal Sheffield Infirmary and Hospital, Royal Infirmary, Sheffield, 6.

THE CHILDREN'S HOSPITAL, Sheffield (Inc.). (201 Beds.) CASUALTY OFFICER (B2) required immediately. Salary £450 non-resident. Limited to 6 months to R practitioners. Successful candidate must be a member of a Medical Defence Society.

Applications, and copies of 3 testimonials, to—
T. H. G. GARTLAND, Superintendent and Secretary.

THE CHILDREN'S HOSPITAL, Sheffield (Inc.). (201 Beds.) PÆDIATRIC SURGEON. Applicants required to devote their entire time to pædiatric surgery and associated teaching and research. Remuneration for full-time appointment £2000 p.a., but consideration might be given to part-time appointment at £1500 p.a., allowing of private practice in pædiatric surgery. Applicants must be Fellows of the Royal College of Surgeons and have experience in the surgery of children.

Applications, with names of 3 referees, to Superintendent and Secretary, The Children's Hospital, Western Bank, Sheffield, 10, by 19th January, 1948.

THE CHILDREN'S HOSPITAL, Sheffield (Inc.). (201 Beds.) RESIDENT MEDICAL ASSISTANT (B1) to a Medical Unit, vacant 5th January, 1948. It includes inpatient and outpatient work. Applicants should have had previous experience in pædiatrics. Preference given to candidates holding a higher qualification. Salary £350 p.a., full residential emoluments. Appointment tenable for 1 year.

Applications, with 3 testimonials, to the Superintendent and Secretary immediately.

THE JESSOP HOSPITAL FOR WOMEN, Sheffield. Gynæcological HOUSE SURGEON (B2), Male or Female, vacant 5th January, 1948. Salary £100 p.a., full residential emoluments. To R practitioners appointment limited to 6 months. Membership of a Medical Defence Society is a condition of appointment.

Applications, stating age, qualifications with dates, nationality, and present post, with copies of 3 recent testimonials, to—
DAVID OSWALD, Superintendent and Secretary.

CITY OF PLYMOUTH. City General Hospital. Assistant Medical OFFICER (A), Male or Female. Appointment for 6 months and terminable by 1 month's notice on either side at any time. Salary £250 p.a., plus war bonus and full residential emoluments. All other fees received by the officer must be refunded to the Council. Duties on the medical side of the Hospital. Further information may be obtained from the Medical Superintendent.

Applications, stating age, qualifications, nationality, and experience, with copies of 1–3 recent testimonials, to undersigned immediately. Forms of application not provided.
T. PEIRSON, Medical Officer of Health.
Seven Trees, Lipson-road, Plymouth.

NORFOLK AND NORWICH HOSPITAL, Norwich. Resident ANÆSTHETIST (A). Salary £250 p.a., full residential emoluments. To R practitioners appointment for 6 months.

Applications to: F. L. GATFIELD, House Governor and Secretary.

NORTHAMPTON GENERAL HOSPITAL. (410 Beds.)
HOUSE SURGEON (A) to the E.N.T. Dept. (post recognised for the D.L.O.).
HOUSE SURGEON (A) to the Obstetric and Gynæcological Dept. (post recognised for the M.R.C.O.G.).

Salary £200 p.a., full residential emoluments. Appointments will run until 30th September, 1948. Any further employment at the Hospital beyond that date at rate of £225 p.a. To R practitioners appointment for 6 months.

Applications, stating age, qualifications, &c., with copies of 3 testimonials, as soon as possible to—
S. G. HILL, Superintendent.

THE STAMFORD, RUTLAND, AND GENERAL INFIRMARY. HOUSE SURGEON (A), Male or Female, now vacant. Salary £200 p.a., full residential emoluments. To R practitioners appointment for 6 months.

Applications, stating age, qualifications with dates, nationality, copies of 3 recent testimonials, immediately to Secretary, H. F. DONALD, The Infirmary, Stamford.

ROYAL ALBERT EDWARD INFIRMARY AND DISPENSARY, WIGAN. HOUSE SURGEON (A), vacant 12th January, 1948. Salary £150 p.a., full residential emoluments. To R practitioners appointment for period of 6 months; otherwise may be extended for a further period.

Applications, stating age, qualifications with dates, and nationality, and accompanied by 3 recent testimonials (copies), should be sent as soon as possible to—
A. STANLEY BRUNT, General Superintendent and Secretary.

WORCESTER ROYAL INFIRMARY. Applications invited for the following appointments, vacant 31st January, 1948, tenable for 6 months:—
RESIDENT ANÆSTHETIST AND HOUSE SURGEON (B2).
GENERAL AND OBSTETRICAL HOUSE SURGEON (A).

Salaries £170 p.a., full residential emoluments.

Applications, with copies of 1–3 testimonials, to—
J. S. RIPPIER, House Governor.

WARRINGTON INFIRMARY AND DISPENSARY. House PHYSICIAN (A), Male or Female. Salary £200 p.a., full residential emoluments. To R practitioners, appointment for 6 months.

Apply at once, giving age, and sending copies of 3 recent testimonials, to the Superintendent.

WESTON-SUPER-MARE GENERAL HOSPITAL. (100 Beds.) HOUSE SURGEON (A), duties to commence 1st February, 1948. Salary £200 p.a., full residential emoluments. To R practitioners appointment for 6 months.

Applications, stating age, qualifications with dates, and nationality, with copies of 3 recent testimonials, to—
LESLIE J. FURSLAND, Secretary.

ROYAL VICTORIA AND WEST HANTS HOSPITAL, Bourne-MOUTH. (374 Beds.) Applications invited immediately for following appointments—
HOUSE PHYSICIAN (B2). CASUALTY OFFICER (B2).

Salary for each post £250 p.a., full residential emoluments. Appointments for 6 months.

Applications, stating age, qualifications, nationality, whether married or single, with copies of 3 recent testimonials, by 10th January, 1948, to: GORDON M. SAUL, Secretary.
12th December, 1947.

CAMBORNE-REDRUTH MINERS' AND GENERAL HOSPITAL, REDRUTH, CORNWALL. HOUSE SURGEON (A), Male or Female, to the Obstetric and Gynæcological Depts., vacant 1st February, 1948, tenable for 6 months. Salary £200 p.a., usual residential emoluments. This appointment is recognised by the Royal College of Obstetricians and Gynæcologists for the D.Obst.

Applications, with copies of 3 testimonials, to—
J. C. FIELD, Secretary-Superintendent.

SOUTHPORT GENERAL INFIRMARY. Junior House Surgeon (A), vacant 12th January, 1948. Appointment for 6 months' duration and subject to the regulations of the National Service Acts. Salary £200 p.a., full residential emoluments.

Applications, stating age, nationality, qualifications with dates, and accompanied by copies of recent testimonials, as early as possible to Superintendent and Secretary.

CHELTENHAM GENERAL EYE AND CHILDREN'S HOSPITAL. (220 Beds.) A vacancy occurs on the staff of above Hospital for HONORARY PSYCHIATRIST. Applicants must have a good knowledge and wide experience of psychiatry. Appointee required to carry out the organisation and administration of the newly created department and expected to coöperate with clinics held at the Gloucestershire Royal Infirmary, and the general arrangements for mental services in the County of Gloucestershire.

Applications, with 3 testimonials, should reach undersigned by 24th January, 1948.
STANLEY T. DAVIS, Secretary-Superintendent.

ROYAL DEVON AND EXETER HOSPITAL, Exeter. (324 Beds—8 Resident Medical Staff employed.) HOUSE SURGEON, Male or Female, to the Obstetric and Gynæcological Dept., vacant 1st February next. Appointment for 6 months. Salary £200 p.a., full residential emoluments.

Applications, with copies of 2 recent testimonials, should reach undersigned by first post 2nd January, 1948.
L. PARKHOUSE, Secretary and Manager.

THE BOLTON ROYAL INFIRMARY. (245 Beds—Resident Medical Staff 7.) RESIDENT ANÆSTHETIST (B2). Suitable post in preparation for D.A. qualification. Salary £225 p.a., full residential emoluments. To R practitioners appointment limited to 6 months.

Applications, stating age, nationality, and experience, with copies of testimonials, as soon as possible to—
H. P. TRAVIS, General Superintendent.
13th December, 1947.

LINCOLN COUNTY HOSPITAL. (Voluntary Hospital—200 Beds.) HOUSE SURGEON (A), Male or Female, vacant now. Salary £225 p.a., full residential emoluments. To R practitioners appointment for 6 months.

Applications, stating age, qualifications with dates, nationality, with copies of 3 recent testimonials, to—
RONALD W. HOWICK, Secretary-Superintendent.

HOVE GENERAL HOSPITAL. Junior House Surgeon (A), Male or Female, to commence 1st February, 1948, for 6 months at a salary of £200 p.a., full residential emoluments.

Applications, stating age, qualifications, nationality, and experience, with copies of 3 recent testimonials, to the Secretary-Superintendent by 31st December, 1947.

COUNTY BOROUGH OF STOCKPORT. Public Health Depart-MENT. MEDICAL DIRECTOR of the Mass Miniature Radiography Service shortly to be inaugurated. Unit is mobile and will operate in any part of the Council's administrative area. Applicants should have experience in, and be thoroughly conversant with, the radiological appearance of all forms of chest disease; if necessary this experience will be supplemented by attendance at the special course of instruction arranged by the Ministry of Health. Salary £900 p.a., annual increments £25 to £1000 p.a., plus cost-of-living bonus.

Appointment subject to provisions of Local Government Superannuation Act, 1937, and candidate appointed required to pass medical examination.

Applications forthwith to the M.O.H., Town Hall, Stockport.
Public Health Department, Stockport,
27th November, 1947.

CITY OF BIRMINGHAM MENTAL HOSPITALS. Rubery Hill DIVISION. Applications invited from unmarried (Male or Female) medical practitioners for whole-time appointment of ASSISTANT MEDICAL OFFICER (B1). Previous experience of mental hospital work not essential. Salary £455 p.a., rising by £25 to £555, plus full residential emoluments valued at £150 p.a., plus cost-of-living bonus. An additional £50 p.a. will be paid to holders of the D.P.M. Appointment subject to the Asylums Officers Superannuation Act, 1909.

Applications, with particulars of age, experience, copies of 3 recent testimonials, &c., in writing to the Medical Superintendent, Rubery Hill Mental Hospital, Birmingham, by 17th January, 1948.

CITY OF BIRMINGHAM. Dudley Road Hospital. (Municipal General Hospital with 1050 Beds.) HOUSE PHYSICIAN (A), Male or Female. Salary £250 p.a., plus residential emoluments. To R practitioners appointment for 6 months; otherwise for 1 year.

Applications, stating age, qualifications, nationality, and experience, with copies of 3 recent testimonials, to the Medical Superintendent, Dudley Road Hospital, Birmingham, 18.

CITY OF BIRMINGHAM, Dudley Road Hospital. (Municipal General Hospital with 1050 Beds.) HOUSE SURGEONS (A), Male or Female. Two vacancies now available, and a third will become vacant end of January. Salary £250 p.a., plus residential emoluments. Approved as resident posts required for the final F.R.C.S. (Eng.). To R practitioners appointment for 6 months; otherwise 1 year.

Applications, stating age, qualifications, nationality, and experience, with copies of 3 recent testimonials, to the Medical Superintendent, Dudley Road Hospital, Birmingham, 18.

BIRMINGHAM UNITED HOSPITAL. The General Hospital. THE QUEEN ELIZABETH HOSPITAL. (Also incorporating THE QUEEN'S HOSPITAL 1840–1941.) Whole-time REGISTRAR (B1) to the E.N.T. Dept. (non-resident). Candidates must be registered medical practitioners, and preference given to those possessing the qualification of F.R.C.S. Eng. or Edin., and with E.N.T. experience. Salary £600–£700 p.a., according to experience.

Applications, stating age, qualifications, experience, nationality, and present post, with copies of 3 recent testimonials, at once to—

G. HURFORD, Secretary, Birmingham United Hospital.

The Queen Elizabeth Hospital, Birmingham 15.

BIRMINGHAM ACCIDENT HOSPITAL AND REHABILITATION CENTRE, Bath-row, BIRMINGHAM, 15. JUNIOR RESIDENT SURGICAL OFFICER (B2), Male, now vacant, for the Medical Research Council Burns Unit. Salary £350 p.a., full residential emoluments. Appointment in first place for 1 year. At expiration of this period successful candidate eligible for post of Senior Resident Surgical Officer.

Applications to: W. GEORGE SPENCER, Secretary.

BIRMINGHAM MATERNITY HOSPITAL. (Associated Teaching Hospital of the UNIVERISTY OF BIRMINGHAM.) RESIDENT SURGICAL OFFICER (B1), vacant 1st March, 1948. Appointment for 12 months and holder eligible for reappointment. Post recognised for the examinations of the Royal College of Obstetricians and Gynæcologists. Applicants should have held house appointments and at least one previous obstetrical post. Preference given to candidates holding the M.R.C.O.G., or reading for this examination. Salary £200 p.a., full residential emoluments.

Applications, stating qualifications, experience, with 3 recent testimonials, as soon as possible to—

BERNARD SYLVESTER, House Governor.

Loveday-street, Birmingham4, 10th, December, 1947.

COVENTRY AND WARWICKSHIRE HOSPITAL, Coventry. HOUSE SURGEON to the Ophthalmic Dept. 6 months' appointment, vacant 1st January, 1948. Salary £200 p.a., full residential emoluments.

Applications, stating age, qualifications with dates, nationality, and accompanied by 3 recent testimonials (copies), should be sent to: S. CECIL HILL, House Governor and Secretary.

COVENTRY AND WARWICKSHIRE HOSPITAL. House SURGEON (A) for Fracture and Accident Wards now about to be reopened. Salary £200 p.a., full residential emoluments. Appointment for 6 months in first instance.

Applications, with full details, to House Governor.

MUNICIPAL GENERAL HOSPITAL, Gulson-road, Coventry. RESIDENT MEDICAL OFFICERS (A and B2). Duties general. No married quarters. Salary £250, £350, or £450, according to experience and qualifications, plus bonus and full residential emoluments. To R practitioners appointment limited to 6 months; otherwise may be extended.

Applications, with copies of 2 testimonials, direct to the Medical Superintendent immediately.

NORTH STAFFORDSHIRE ROYAL INFIRMARY, Stoke-on-TRENT. (475 Beds.) HOUSE SURGEON (A), Male or Female, to the Orthopædic Dept. Post tenable for 6 months and offers exceptional experience in traumatic surgery and accident service. Salary £250 p.a., full residential emoluments.

Applications to the House Governor.

COUNTY BOROUGH OF WALSALL. Manor Hospital. (333 Beds.) HOUSE PHYSICIAN (B2) (additional appointment). Salary £350 p.a., full residential emoluments. To R practitioners appointment limited to 6 months.

Applications as soon as possible to the Medical Superintendent.

BECKETT HOSPITAL AND DISPENSARY, Barnsley. Casualty OFFICER (B1), vacant 14th January, 1948. Applicants should have held house appointments and had surgical experience. Capability to perform emergency operations a recommendation. Salary £350 p.a., full residential emoluments.

Applications, stating age, nationality, qualifications with dates, experience, and details of previous appointments, accompanied by copies of 3 recent testimonials, to—

ARTHUR L. BOURNE, Secretary-Superintendent.

BECKETT HOSPITAL AND DISPENSARY, Barnsley. House PHYSICIAN (B2), Male. Salary £225 p.a., full residential emoluments. To R practitioners appointment for 6 months.

Applications, stating age, nationality, qualifications, and previous experience, with copies of 3 recent testimonials, should be sent immediately to—

A. L. BOURNE, Secretary-Superintendent.

MONTAGU HOSPITAL, Mexborough, Yorks. (122 Beds—Voluntary, with Visiting Consultant Staff.) HOUSE SURGEON (B2), Male. Commencing salary £200 p.a., full residential emoluments. To R practitioners appointment for 6 months.

Applications to: A. R. C. RENNER, Secretary-Superintendent.

HUDDERSFIELD ROYAL INFIRMARY. (321 Beds.) Casualty OFFICER (B2) required to commence immediately. Salary £200 p.a., full residential emoluments. Limited to 6 months to R practitioners.

Applications to be sent to—

H. J. JOHNSON, General Superintendent and Secretary.

CITY OF BRADFORD. Joint Hospitals Council. The Council invite applications for 2 appointments of RADIOLOGIST (whole time), each at a salary of £500 p.a., plus share of private fees, with a minimum guaranteed remuneration of £1750 p.a. Private fees divided equally between all the radiologists after deduction of one-third or the cost to the Hospital, whichever is the greater. Duties of appointment will normally be carried out at the Royal Infirmary, Bradford, but attendance at other Hospitals in the group may be required. The Hospitals together draw from a population of approximately 900,000.

Applications should be sent as soon as possible to—

HY. TRUSSON, House Governor and Secretary.

The Royal Infirmary, Bradford.

BRADFORD ROYAL INFIRMARY.

HOUSE SURGEON (B2) (orthopædic), vacant immediately.

HOUSE SURGEON (A) (general), vacant 1st February, 1948. 6 months' appointment. Salary £200 p.a., full residential emoluments. There are 372 Beds and 14 Resident Officers.

Applications, stating age, nationality, qualifications, and previous experience, with copies of 3 recent testimonials, immediately to: HY. TRUSSON, House Governor and Secretary.

KINGSTON UPON HULL CORRORATION HEALTH DEPART-MENT. BEVERLEY ROAD HOSPITAL. (432 Beds.) SENIOR HOUSE OFFICER (B1) (Medical), Male or Female, tenable for 3 years. Salary £455 p.a., plus cost-of-living bonus, rising to £555 p.a. by annual increments of £25, plus full residential emoluments. Members of H.M. Forces, may apply.

Forms of application; conditions of appointment, &c., may be obtained from, and the form should be returned duly completed to, the M.O.H., Guildhall, Kingston upon Hull, by 10 A.M., 5th January, 1948.

HULL ROYAL INFIRMARY. Applications invited from medical practitioners holding a diploma in radiology for post of Whole-time NON-RESIDENT RADIOLOGIST (diagnosis). Salary £1000 p.a. Appointment in accordance with Ministry of Health Circular 202/46, and in the first instance limited to the interim period pending the establishment of the National Health Service.

Applications, accompanied by 3 testimonials or the names of 3 referees, as soon as possible to—

R. J. CARLESS, House Governor.

HULL ROYAL INFIRMARY. First and Second House Surgeons (B2), 2 posts, vacant January. Salary £200 p.a., full residential emoluments. Appointments for 6 months in the first instance, but will be terminable by 1 month's notice on either side.

Applications to: R. J. CARLESS, House Governor.

ROYAL HALIFAX INFIRMARY. (283 Beds.)

ORTHOPÆDIC REGISTRAR (non-resident), Male, vacant early January. Salary according to experience, but not less than £750 p.a. commencing. Candidates should be well trained in orthopædics, and the possession of higher qualifications will be an advantage.

FIRST HOUSE SURGEON (B2), Male, vacant January, 1948. 6 months' post. Salary £250 p.a., full residential emoluments.

OPHTHALMIC, E.N.T. HOUSE SURGEON (A or B2), Male, vacant now. 6 months' post. Salary for A candidate £200 p.a., and for B2 £250 p.a. Full residential emoluments.

Applications, stating age, qualifications, experience, nationality, &c., with copies of 3 recent testimonials or the names of 3 referees, to the Secretary as soon as possible.

DARLINGTON MEMORIAL HOSPITAL. (210 Beds—Comple-ment: 6 House Officers.) HOUSE SURGEON (A) to the Orthopædic Dept., vacant 21st January, 1948. Salary £175 p.a., full residential emoluments. To R practitioners appointment limited to 6 months.

Applications, stating age, nationality, qualifications, and experience, with copies of testimonials, as soon as possible to—

G. W. BECKWITH, Secretary-Superintendent.

THE KIDDERMINSTER AND DISTRICT GENERAL HOSPITAL. CASUALTY HOUSE SURGEON (A). Post vacant immediately to Male or Female. Salary £200 p.a., full residential emoluments. Limited to 6 months to R practitioners.

Applications should be sent immediately to—

C. M. SMITH, House Governor and Secretary.

ADDENBROOKE'S HOSPITAL, Cambridge. House Surgeon (B2), Male or Female, to the Dept. of Otolaryngology, vacant 26th January, 1948. Salary £200 p.a., full residential emoluments. To R practitioners appointment limited to 6 months, which is the normal period of appointment.

Applications, with copies of 3 recent testimonials, by 7th January, 1948, to: J. A. BEARDSALL, Secretary-Superintendent.

DERBYSHIRE ROYAL INFIRMARY, Derby. House Surgeon (A) for gynæcology, vacant 31st January, 1948. Recognised by R.C.O.G. Salary £200 p.a., full residential emoluments. 6 months' appointment.

Applications, with copy of testimonials, as early as possible to—

ARTHUR TAYLOR, Superintendent and Secretary.

THE UNIVERSITY OF LIVERPOOL. Department of Obstetrics AND GYNÆCOLOGY. Applications invited for post of Whole-time RESIDENT OBSTETRICAL REGISTRAR AND TUTOR, at a salary within the range £400–£550 p.a., according to qualifications and experience, with board-residence in the Liverpool Maternity Hospital. Appointment for 1 year in the first instance, duties to commence as soon as can be arranged. Post suitable for those studying for higher qualifications, but previous resident experience in obstetrics and gynæcology is essential.

Applications, which should include particulars as to age, education, and experience, with the names of 3 referees, should be received not later than 24th January, 1948, by undersigned, from whom particulars as to the conditions of appointment may be obtained.

December, 1947. STANLEY DUMBELL, Registrar.

LIVERPOOL JOINT BOARD FOR CLINICAL PATHOLOGY. (UNIVERSITY OF LIVERPOOL AND LIVERPOOL ASSOCIATED VOLUNTARY HOSPITALS BOARD.) Applications invited for following posts :—

7 CLINICAL PATHOLOGISTS at Royal Infirmary, David Lewis Northern Hospital, Royal Southern Hospital, Stanley Hospital, Royal Liverpool Children's Hospital, Women's Hospital jointly with the University Pathology Dept., and at Maternity Hospital jointly with the University Pathology Dept.

1 ASSISTANT CLINICAL PATHOLOGIST (at Royal Infirmary).

The persons appointed will be members of one team under the joint direction of the University Professors of Pathology and of Bacteriology, and will have a recognised status as members of the University Teaching Staff. Some exchange of duties may from time to time be necessary. Salaries for Clinical Pathologists according to qualifications and experience, but not less than £1200 p.a. Salary of the Assistant Clinical Pathologist within the range of £850–£1000 p.a. Provision will be made in all cases for membership of the Federated Superannuation Scheme for Nurses and Hospital Officers or the Federated Superannuation Scheme for Universities.

Applications, giving the names of 3 referees, and stating an order of preference for the various posts, should reach undersigned by 10th January, 1948.

A. V. J. HINDS, Secretary, Joint Board for Clinical Pathology, 80, Rodney-street, Liverpool, 1.

ROYAL LIVERPOOL CHILDREN'S HOSPITAL, Myrtle-street, LIVERPOOL, 7. JUNIOR CASUALTY OFFICER (A), Male or Female. Appointment for 6 months. Salary £120–£180 p.a., according to experience, with full residential emoluments.

Applications, accompanied by the name of a referee, should be sent to the Secretary immediately.

COUNTY BOROUGH OF ROCHDALE. Birch Hill General AND MATERNITY HOSPITAL, ROCHDALE. (475 Beds.) RESIDENT JUNIOR ASSISTANT MEDICAL OFFICER (A) (Surgery and Gynæcology). Salary £292 10s., rising to £342 10s. p.a. after 6 months' satisfactory service. To R. practitioners appointment for 6 months; otherwise not exceeding 1 year.

Forms of application may be obtained from the M.O.H., P.H. Dept., Baillie-street, Rochdale, and should be returned to him by 5th January, 1948. G. F. SIMMONDS, Town Clerk.

CITY AND COUNTY OF BRISTOL. Southmead Municipal GENERAL AND MATERNITY HOSPITAL. (588 Beds.) Applications invited from registered medical practitioners, Male or Female, for following appointments for 6 months commencing 1st March : OBSTETRIC OFFICER (B1); OBSTETRIC OFFICER (B2); HOUSE SURGEONS and HOUSE PHYSICIANS (A). Salaries, Obstetric Officers £335, others £200, residential emoluments, temporary bonus.

Forms obtainable from M.O.H., Kenwith Lodge, Westbury Park, Bristol, 6, and returnable by 5th January.

LANCASHIRE COUNTY COUNCIL. Public Health Committee. COUNTY HOSPITAL, WHISTON, PRESCOT, near LIVERPOOL.

(*a*) HOUSE SURGEON (B2) (E.N.T.), Male or Female.

(*b*) HOUSE SURGEON (B2) (orthopædic), Male or Female.

Hospital approved for the D.L.O. Salary for each appointment £250 p.a., plus a cost-of-living bonus and full residential emoluments. To R practitioners appointments limited to 6 months; otherwise may be extended for a further 6 months.

Forms of application may be obtained from the County Medical Officer of Health, Hospital and Medical Department, County Offices, Preston, to whom they must be returned by 12th January, 1948.

R. H. ADCOCK, Clerk of the County Council.

County Offices, Preston, 16th December, 1947.

LANCASHIRE COUNTY COUNCIL. County Hospital, Ashton-UNDER-LYNE, near MANCHESTER. JUNIOR RESIDENT MEDICAL OFFICER (B2), Male or Female. Salary £250 p.a., cost-of-living bonus and full residential emoluments. To R practitioners appointment limited to 6 months; otherwise may be renewed for a further 6 months. Appointment subject to medical examination and superannuable.

Forms of application may be obtained from the County Medical Officer of Health, Hospital and Medical Department, County Offices, Preston, to whom all applications must be forwarded by 12th January, 1948.

R. H. ADCOCK, Clerk of the County Council.

County Offices, Preston, 16th December, 1947.

ROYAL BERKSHIRE HOSPITAL, Reading. Casualty Officer (A), Male, vacant immediately. Salary £150 p.a., full residential emoluments. To R practitioners appointment for 6 months.

Applications, stating age, qualifications with dates, nationality, and present post, with copies of 3 recent testimonials, immediately to House Governor.

BUCKS COUNTY COUNCIL. Amersham General Hospital. RESIDENT MEDICAL OFFICER (A). Appointment, at present vacant, tenable for 6 months. Salary £200 p.a., plus residential emoluments.

Applications, stating age, nationality, qualifications with dates, together with 3 recent testimonials, to the Medical Director as soon as possible.

UNIVERSITY OF DURHAM. King's College, Newcastle upon TYNE. DEPARTMENT OF ANATOMY. The Council of King's College invite applications for post of LECTURER IN ANATOMY. Salary scale rises by annual increments of £25 to maximum of £850. Commencing salary will be fixed at a point on that scale in accordance with his qualifications and experience, but will not, in any case, be less than £500.

Applications (10 copies), with the names of 3 referees, should be submitted as early as possible to undersigned, from whom further particulars may be obtained.

G. R. HANSON, Registrar of King's College.

SCUNTHORPE AND DISTRICT WAR MEMORIAL HOSPITAL. (256 Beds—40 Orthopædic Beds.) RESIDENT ORTHOPÆDIC OFFICER (B1), now vacant. Preference given to candidates with previous experience in orthopædics. Post recognised for the F.R.C.S. Salary not less than £275 p.a., full residential emoluments.

Applications and testimonials immediately to the Secretary-Superintendent.

MANCHESTER VICTORIA MEMORIAL JEWISH HOSPITAL, CHEETHAM, MANCHESTER, 8. (Non-Sectarian—102 Beds.) CASUALTY OFFICER AND HOUSE SURGEON (A). Salary £175 p.a., full residential emoluments. Appointment for 6 months.

Applications to : C. D. DRAKE, General Superintendent.

MANCHESTER CORPORATION. Withington Hospital. (Adult, General—1150 Beds.) HOUSE OFFICER (B2) for work on the medical wards, vacant February, 1948. To R practitioners appointment for 6 months; otherwise 12 months. Candidates must have had previous hospital experience. Basic salary £250 p.a., board, residence, and laundry in addition valued at £120 p.a., subject to the Manchester Corporation conditions of service. Temporary bonus payable in addition to salary. Members of H.M. Forces may apply.

Applications, stating full name, date of birth, nationality, qualifications with dates, particulars of present appointment and past hospital appointments, to the Medical Superintendent, Withington Hospital, West Didsbury, Manchester, 20, and must be received by 10th January, 1948. Canvassing in any form is prohibited. PHILIP B. DINGLE, Town Clerk.

Town Hall, Manchester, 2, 3rd December, 1947.

MANCHESTER NORTHERN HOSPITAL, Cheetham Hill-road, MANCHESTER, 8. (General Hospital—116 Beds.)

RESIDENT HOUSE SURGEON (A), vacant 1st February, 1948.

RESIDENT HOUSE PHYSICIAN (B2), vacant mid-February, 1948.

Salary in each case £150 p.a., board and residence. Appointments for 6 months.

Applications to Mr. JAMES C. DANIELS, Secretary, 38, Barton-arcade, Manchester, 3, by 5th January, 1948.

THE DUCHESS OF YORK HOSPITAL FOR BABIES, Man-CHESTER, 19. (86 Cots.) JUNIOR RESIDENT MEDICAL OFFICER (A), Male or Female, for 6 months from 25th January, 1948. Salary £150 p.a., full emoluments.

Applications, with copies of 3 testimonials, by 5th January, 1948, to : LOUISE GILLISPIE, Secretary.

ANCOATS HOSPITAL, Manchester, 4. Vacancies will occur for 4 HOUSE SURGEONS, Male or Female, about 18th January next. Salary £160 p.a., with full residential emoluments. Appointment for 6 months.

Applications, with copies of 3 recent testimonials, to the General Superintendent and Secretary by 6th January, 1948.

EAST SUFFOLK COUNTY COUNCIL. Medical Staff. Applications invited for under-mentioned appointments to staff of Public Health Dept. :—

(1) SENIOR ASSISTANT MEDICAL OFFICER. Applicants should have good administrative experience of the work of a County Public Health Dept. and preference given to applicants with experience in mental health. Salary £900 a year.

(2) ASSISTANT MEDICAL OFFICER (Female). This officer will be concerned primarily with the development of the maternity and child welfare service and preference given to applicants possessing a D.C.H. Salary within scale £650–£850 a year; commencing salary according to experience and qualifications.

Cost-of-living bonus at present £59 16s. a year, together with a travelling allowance in accordance with the Council's scale are payable in both cases. Appointments subject to Local Government and Other Officers Superannuation Act, 1937.

Application forms are obtainable from the County Medical Officer, County Hall, Ipswich, to whom they should be returned by 31st January, 1948. G. C. LIGHTFOOT, Clerk of the Council.

WREXHAM AND EAST DENBIGHSHIRE WAR MEMORIAL HOSPITAL. RESIDENT HOUSE SURGEON (B2), Casualty and Fracture Dept., Male or Female, to commence 10th January, 1948. Salary £350 p.a., full residential emoluments. 6 months' appointment.

Applications to : LESLIE SPENCER, Secretary.

GENERAL HOSPITAL, Nottingham. (589 Beds including "The Cedars" Branch Hospital.) RESIDENT ANÆSTHETIST (B1), Male or Female. To R practitioners appointment for 12 months. Salary £400 p.a., full residential emoluments. Duties commence on or about 15th January, 1948.

Applications, stating age, qualifications, and experience, with copies of testimonials, to—

HENRY M. STANLEY, House Governor and Secretary.

GENERAL HOSPITAL, Nottingham. Applications invited for a whole-time ex-Service MEDICAL SPECIALIST under the Ministry of Health scheme for additional specialist appointments. Salary £1000 p.a. Duration of appointment limited to the interim period pending the establishment of the National Health Service Act. Successful candidate expected to carry out duties at other hospitals in the area if so desired.

Applications, with copies of testimonials, as soon as possible to : HENRY M. STANLEY, House Governor and Secretary.

ROYAL NATIONAL HOSPITAL FOR DISEASES OF THE CHEST, VENTNOR, ISLE OF WIGHT. (233 Beds for pulmonary tuberculosis.) ASSISTANT RESIDENT MEDICAL OFFICER, vacant 1st February. Candidates must be unmarried. Salary £300 p.a., full residential emoluments.

Applications, with copies of 3 testimonials, to Medical Superintendent at once.

SALOP COUNTY COUNCIL. Assistant County Medical Officer on the County Medical Staff. Duties mainly in connexion with the school health and maternity and child welfare services. Applicants should hold a qualification in public health, and preference given to those who have been approved for the purposes of giving certificates under the Mental Deficiency Acts, and for the ascertainment of "Handicapped Pupils." Salary scale £650, annual increments £25 to £850 p.a., plus bonus (at present £59 16s.), and point of commencement on scale will depend upon previous experience. Successful applicant expected to provide a car, and travelling and subsistence allowances paid on the County scale. Appointment subject to Local Government Superannuation Act, 1937, and successful candidate required to pass medical examination.

Forms of application with the conditions of service may be obtained from undersigned, and should be returned, with copies of 3 recent testimonials, by 17th January, 1948.

WILLIAM TAYLOR, County Medical Officer.

College Hill House, Shrewsbury, 10th December, 1947.

ROYAL SALOP INFIRMARY, Shrewsbury. (235 Beds.) House SURGEON (A), Male or Female. Salary £200 p.a., full residential emoluments. To R practitioners appointment for 6 months; otherwise may be extended.

Applications to: J. P. MALLETT, Secretary-Superintendent.

Board Room, 9th December, 1947.

GLAMORGAN COUNTY MENTAL HOSPITAL, Bridgend. JUNIOR ASSISTANT MEDICAL OFFICER (B1), Male, required. Salary £455 p.a. annual increments £25 to £555 p.a., with an additional £50 to the holder of the D.P.M., and emoluments (board, apartments, washing, and attendance) valued at £150 p.a., also war bonus at present £59 16s. p.a., less contributions towards a superannuation allowance under the Asylums Officers Superannuation Act, 1909. There is accommodation for a married man. Appointment probationary for 6 months.

Applications, stating age, qualifications, &c., with copies of recent testimonials, to the Medical Superintendent, endorsed outside "Junior Assistant Medical Officer," by 10th January, 1948.

COUNTY BOROUGH OF NEWPORT. Social Welfare Committee. TEMPORARY JUNIOR RESIDENT MEDICAL OFFICER (A), Male or Female, at Wooloston House Hospital, Newport, Mon. Salary £200 p.a., full residential emoluments. All fees, with the exception of coroners' fees, are payable to the Social Welfare Committee. To R practitioners appointment for 6 months; otherwise 12 months.

Applications, with 2 recent testimonials, should be sent at once to: TOM KAY, Director of Social Welfare, Social Welfare Department, Town Hall, Newport, Mon.

December, 1947.

THE WELSH NATIONAL SCHOOL OF MEDICINE. (University of Wales.) Applications invited for PROFESSORSHIP OF PATHOLOGY AND BACTERIOLOGY. Full-time appointment. Salary £1850 p.a., with participation in the superannuation scheme.

Further particulars may be obtained from undersigned, by whom applications should be received not later than 21st February, 1948.

10, The Parade, Cardiff. S. C. EDWARDS, Secretary.

ABERDEEN ROYAL INFIRMARY. Board of Directors invites applications for post of HONORARY ASSISTANT PHYSICIAN. Holder will, however, have the option of drawing a salary from the date of his appointment until the establishment of the National Health Service, but in that case the post will be regarded as a full-time one and appointee precluded from engaging in private practice during that time. Salary during period within the range of £750–£900 p.a., according to qualifications and experience.

Applications (3 copies), giving full particulars of qualifications and experience and submitting the names of 3 referees, should be lodged with undersigned by 10th January, 1948.

JOHN A. MCCONACHIE, Clerk and Treasurer.

1, Albyn-place, Aberdeen, December, 1947.

LEITH HOSPITAL (Incorporated), Edinburgh, 6. Board of Managers invite applications, including those from members of H.M. Forces, for appointment as ASSISTANT PHYSICIAN on the Honorary Medical Staff. Candidates must be Fellows of the Royal College of Physicians.

Applications, with copies of 3 recent testimonials, by 15th January, 1948, to the Honorary Secretary, 10, Mill-lane, Leith, Edinburgh, 6.

CORPORATION OF DUNDEE. Public Health Department. WESTGREEN MENTAL HOSPITAL. RESIDENT JUNIOR ASSISTANT MEDICAL OFFICER (A), now vacant. Salary £300 p.a., plus war bonus with full residential emoluments. (No married quarters available.) To R practitioners appointment for 6 months. R practitioners who have been qualified for more than 3 months must have obtained the sanction of the Scottish Central Medical War Committee to their application.

Applications, stating age, nationality, qualifications with dates, and accompanied by copies of 3 recent testimonials, to the Medical Superintendent.

OLDHAM ROYAL INFIRMARY. (203 Beds.) House Surgeon (A), Male or Female. Appointment for 6 months. Appointee will act as House Surgeon to the Gynæcologist, the Aural Surgeon, and will assist in the Casualty Dept. Salary £200 p.a., full residential emoluments.

Applications, with copies of 3 testimonials, immediately to—

F. W. BARNETT, House Governor and Secretary.

NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. Applications invited for appointment of REGIONAL PSYCHIATRIST to above Board at an inclusive salary of £1900 p.a. Applicants must be of specialist psychiatric status, preferably with administrative experience in the psychiatric service. His primary duty will be to advise and assist the Board and the Senior Administrative Medical Officer in the development and administration of the psychiatric service as an integral part of the Board's hospital and specialist service. He will be expected regularly to attend the meetings of the Mental Health Subcommittee of the Board and also to attend meetings of the Board and its committees at which matters affecting the psychiatric service are to be under discussion. In addition to his duties as Regional Psychiatrist he will be required to undertake such other administrative duties as the Senior Administrative Medical Officer may reasonably request in relation to the hospital and specialist services of the Board and to act as one of the 2 deputies to the Senior Administrative Medical Officer. His other duties permitting, he may be allowed to undertake active clinical work. Appointment subject to National Health Service (Superannuation) Regulations 1947, and terminable by 3 months' notice by either party.

Applications, giving particulars of qualifications and experience, with the names of 3 referees, should be addressed, in an envelope endorsed "Regional Psychiatrist," to the Senior Administrative Medical Officer, Newcastle upon Tyne Regional Hospital Board, 11, Osborne-terrace, Newcastle upon Tyne, 2, so as to reach him by 10th January, 1948. Canvassing in any form will disqualify.

NEWCASTLE UPON TYNE REGIONAL HOSPITAL BOARD. Applications invited for appointment of ASSISTANT SENIOR MEDICAL OFFICER to above Board at an inclusive salary of £1450, annual increments of £50 to £1650. Applicants should have had such previous experience in hospital administration as will enable them to assist the Board and the Senior Administrative Medical Officer in the planning, organisation, and staffing of the hospital and specialist services (exclusive of the psychiatric service), and to act as one of the 2 deputies to the Senior Administrative Medical Officer. Applicants should preferably have had specialist experience in tuberculosis and be capable of taking responsibility for the planning and administration of the tuberculosis hospital and specialist service. His other duties permitting, he may be allowed to undertake active clinical work. Appointment subject to National Health Service (Superannuation) Regulations, 1947, and terminable by 3 months' notice by either party.

Applications, giving particulars of qualifications and experience, with the names of 3 referees, should be addressed, in an envelope endorsed "Assistant Senior Medical Officer," to the Senior Administrative Medical Officer, Newcastle upon Tyne Regional Hospital Board, 11, Osborne-terrace, Newcastle upon Tyne, 2, so as to reach him by 10th January, 1948. Canvassing in any form will disqualify.

CITY AND COUNTY OF NEWCASTLE UPON TYNE. Newcastle GENERAL HOSPITAL. Applications invited from registered medical practitioners, Male and Female, for following posts, tenable for 6 months:—

2 HOUSE PHYSICIANS (A) and 4 HOUSE SURGEONS (A), vacant 1st February, 1948.

HOUSE PHYSICIAN (A) to the Children's Dept., vacant 1st February, 1948. The Dept. is actively associated with, and shares staff with, the Dept. of Child Health of Durham University, and the post offers exceptional opportunities for gaining experience in many aspects of pædiatrics.

HOUSE SURGEON (A) to the Neurosurgical Dept., vacant 14th February, 1948.

Salary for above posts £150 p.a.

HOUSE SURGEON (B2) to the Neurosurgical Dept., vacant 14th February, 1948. Salary £250 p.a.

Each of the above appointments carries cost-of-living bonus and residential emoluments.

Applications should be forwarded to the M.O.H., Town Hall, Newcastle upon Tyne, 1, as soon as possible.

Town Hall, Newcastle upon Tyne, 1, 16th December, 1947. JOHN ATKINSON, Town Clerk.

DONCASTER ROYAL INFIRMARY. (330 Beds.) House Surgeon (A), Male. Salary £225 p.a., full residential emoluments. To R practitioners appointment for 6 months. Successful candidate required to take up duties towards the end of January.

Applications, stating age, qualifications with dates, and nationality, with copies of 3 recent testimonials, immediately to the Secretary-Superintendent.

COUNTY BOROUGH OF PRESTON. Assistant Medical Officer OF HEALTH AND ASSISTANT SCHOOL MEDICAL OFFICER. Appointee required to carry out the medical inspection of school-children and maternity and child welfare work, and perform such other duties as may be allotted to him by the M.O.H. Salary on an appropriate step in the grade £650–£25–£850 p.a., according to previous experience. Cost-of-living bonus, at present £59 16s., payable. The person appointed expected to pass medical examination and to contribute to the Corporation's superannuation fund.

Further particulars and forms of application may be obtained from the M.O.H., Municipal Building, Preston, to whom they should be returned by 5th January, 1948.

W. E. E. LOCKLEY, Town Clerk.

Municipal Building, Preston, 15th December, 1947.

HEREFORDSHIRE GENERAL HOSPITAL, Hereford (154 Beds.) Immediate applications invited for following posts:—

(*a*) RESIDENT SURGICAL OFFICER (B1). Previous surgical experience essential. Salary £250 p.a.

(*b*) RESIDENT JUNIOR HOUSE SURGEON (A). In charge of Casualty, E.N.T., and Fracture Depts. Salary £200 p.a.

The appointments are for 12 and 6 months respectively.

Applications to: T. W. UPTON, Secretary.

PUBLISHED by the PROPRIETORS, THE LANCET LIMITED, 7, Adam Street, Adelphi, in the County of London.
Printed by HAZELL, WATSON & VINEY, LTD., London and Aylesbury—Saturday, December 27, 1947.
PRINTED IN GREAT BRITAIN—Entered as Second Class at the New York, U.S.A., Office.

COUNTY BOROUGH OF BLACKBURN. Assistant Medical OFFICER OF HEALTH (Female). Duties mainly connected with maternity and child welfare. A D.P.H., though not essential, will be considered an additional qualification for the position. Salary £650, annual increments £25 to maximum £850 p.a., plus war bonus £48 2s. p.a. Commencing salary may be fixed at a rate higher than £650 in the case of a candidate who has had previous experience as an Assistant Medical Officer of Health.

Forms of application may be obtained from the M.O.H., Victoria-street, Blackburn, and should be returned to him by 15th January, 1948. CHAS. S. ROBINSON, Town Clerk.

BIRMINGHAM UNITED HOSPITAL. The General Hospital. THE QUEEN ELIZABETH HOSPITAL. (Also incorporating the QUEEN'S HOSPITAL 1840–1941.) Teaching Hospital of 1000 Beds (in association with the BIRMINGHAM UNIVERSITY). Applications invited for following posts:—

2 RESIDENT ANÆSTHETIC REGISTRARS (B1). Salary £350 p.a., full residential emoluments.

1 NON-RESIDENT ANÆSTHETIC REGISTRAR (B1). Salary £450 p.a.

Candidates must be registered medical practitioners, have had experience in the Anæsthetic Dept. of a general hospital, and possess the D.A.

Applications to the undersigned, from whom all further information may be obtained, at once.

G. HURFORD, Secretary, Birmingham United Hospital.
The Queen Elizabeth Hospital, Birmingham, 15,
17th December, 1947.

MINISTRY OF FUEL AND POWER. Temporary Mines Medical OFFICER (Male) in the Midland Region, Birmingham. Salary £1150 by £30 to £1300 by £50 to £1500 consolidated. Scale subject to normal provincial differentiation, and starting pay will be linked to age 38; £30 will be normally deducted for each year of age below 38, and addition of £30 for each year up to age 40 will be made. A minimum of 2 years in general practice is essential and professional experience among coal-miners desirable. Duties mainly connected with occupational diseases and the first-aid and ambulance arrangements at the mines, involving work underground; and with coördinating and promoting the improvement and fuller use by miners of medical, hospital, and rehabilitation services. Appointment for 5 years in the first instance. Members of H.M. Forces may apply.

Applications, stating age, qualifications with dates, experience, and nationality, by 15th January, 1948, to Establishments Directorate, Ministry of Fuel and Power, 7, Millbank, London, S.W.1.

BLOOD TRANSFUSION SERVICE. Applications invited from persons with suitable qualifications (preferably medical) for the joint position of REGIONAL DIRECTOR (South-east Scotland) and DIRECTOR of Central Depot (Eastern Area) (embodying Plasma Drying Unit) at Edinburgh. Salary for joint position £1100–£25–£1200 maximum. Superannuation.

Applications in writing to: CHARLES S. GUMLEY, W.S., Secretary, The Scottish National Blood Transfusion Association, 10, Duke-street, Edinburgh, 1.

AMENDED ADVERTISEMENT

ISLE OF MAN MENTAL HOSPITAL, Douglas, Isle of Man. ASSISTANT MEDICAL OFFICER (B1), Male. Salary £455, annual increments £25 to £555, full residential emoluments, valued for superannuation purposes at £200 p.a. Additional £50 will be paid for possession of the D.P.M. *Low rate of income-tax* (current year's tax begins at 2s. in the £). A small furnished flat is available for a married man with domestic services including food, in which case the above emoluments will be adjusted. A car is available for the reasonable use of the successful candidate, who will be required to pass a medical examination. The appointment is pensionable under the I.O.M. Superannuation Acts and is terminable by 2 months' notice on either side. Applications, with copies of 3 recent testimonials or the names of 3 professional persons to whom reference may be made, to the Medical Superintendent by 7th January, 1948. Canvassing in any form will disqualify.

NORTHERN RHODESIA. Rhokana Corporation Limited, Nkana-KITWE. NCHANGA CONSOLIDATED COPPER MINES LIMITED, CHINGOLA. 3 vacancies will arise in the medical services of the above 2 Copper Mining Companies during the first half of 1948. 2 Medical Officers with higher qualifications in medicine and 1 with a higher qualification in surgery will be required. Their duties will be the care in general of the Companies employees, both European and African, in association with their other Medical Officers (4 and 3 respectively), the physicians acting in addition as medical specialists and having charge of the 2 European hospitals (45 and 30 Beds) under the direction of the Chief Medical Officers of the respective Mines, and the surgeon as assistant surgical specialist (stationed at Nkana). They will also carry out such duties as may from time to time be required of them by Chief Medical Officers of the respective Companies. Remuneration will be at the commencing rate of £1440 p.a., of which £240 p.a. is for such private work as they may be called upon to do. In addition there are monetary benefits amounting at present to about 25% of salary, and there is a superannuation scheme. Free motor transport is provided. Leave is at the rate of 50 days p.a. and may be accumulated up to 150 days. Partly furnished houses are available at inclusive rents of £3–£4 10s. per month. African servants are easily obtained. Income-tax on the above salary and benefits is at present rates approximately £265 for a single man and about £110 for a married man with 2 children. Appointments are usually terminable at 3 months' notice on either side.

Fuller details may be obtained by letter from the Secretary, Rhokana Corporation Limited, 11, Old Jewry, London, E.C.2, to whom applications, accompanied by 3 testimonials and the names of 2 medical referees, should be sent on or before 2nd January, 1948. Experience in general practice should be given. Successful candidates will be required to pass a medical examination before final acceptance.

KING EDWARD MEMORIAL HOSPITAL, Ealing. Catering OFFICER (Male or Female) experienced in catering purchasing and preparation of menus and control of staff essential, and experience in institutional catering desirable. Salary within the scale £300–£400 p.a., according to experience, together with full residential emoluments or self-contained flat according to circumstances. Federated superannuation scheme for nurses and hospital officers (contributory) in force.

Particulars of duties and forms of application (upon which all applications must be made and submitted by 31st January, 1948) may be obtained from—

R. A. MICKELWRIGHT, House Governor.
King Edward Memorial Hospital, Mattock-lane, Ealing, W.13.

Research Biochemist required immediately.—Reply, with full particulars, to: Secretary, RESEARCH INSTITUTE, 117, Grove-street, Liverpool, 7.

Imperial Chemical Industries invite applications for the post of MEDICAL OFFICER (Male) at their Billingham Division. The existing medical staff consists of 1 Division Medical Officer and 2 Assistant Medical Officers. The present post offers prospects of advancement with salary dependent on age, qualifications, &c.—Candidates should apply for the necessary application form to Central Staff Department, 2, Grosvenor-place, Hyde Park Corner, London, S.W.1.

Death Vacancy for Sale in residential London suburb. First-class mixed General Practice, average receipts approximately £3400; panel 2000. Detached house with 4 bedrooms, well-planned surgery accommodation, and small garden and garage, to rent. Car available. Efficient Locum, who is used to the practice, now in charge.—Address, No. 906, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Experienced Woman Doctor desires Assistantship, permanent or with view to Partnership. N.E. England or South Midlands preferred but not essential. Small house or flat. Car owner. Capital.—Address, No. 905, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Partnership offered energetic man in rapidly expanding practice, Fulham. Tremendous scope. Protestant, British.—Address, No. 909, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Assistant with a view wanted. Married man. House available. Midlands first-class Practice. Assistant also wanted.—Address, No. 908, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Vacancies are occurring from time to time for Assistants, Locums, Hospital Locums, and Ships' Surgeons appointments. Practices and Partnerships for Disposal.—Write: A. SHAW, Medical Agent, Premier Buildings, 88, Church-street, Liverpool, 1.

Convalescent Sanatorium near Ventnor, established 39 years. 30 patients taken; 5 staff. Beautiful property, attractive buildings in 2 acres of delightful grounds with sea views. Well-equipped wards and private quarters. £9300 Freehold property, contents, equipment, and goodwill. Folio No. 2586.—Write: ASHCROFT & TAYLOR, Estate Agents, Ventnor, I.W.

Harley-street, W.—House with Mews premises for Sale, 960 years' lease. Ground rent £110 p.a. Redecorated. Ready for development for consulting and residential use. 5 consulting-rooms, waiting-room, 8 residential, 2 bathrooms, and offices. Central heating.—Full details: Sole Agents, LEY CLARK AND PARTNERS, 3, Wimpole-street, W. (LANgham 1095).

Surrey.—Excellently equipped and busy Nursing-home in high-class locality 30 miles London, is offered for Sale complete for £4500. —COMMERCIAL DEVELOPMENT COMPANY, 199, London-road, Sevenoaks, Kent.

Clinical Pathology.—The Clinical Department of the Hoss Research Laboratories, Sunbury-on-Thames (Tel.: Sunbury 2300), is staffed and equipped to undertake clinical pathological work of all types, including hæmatology, bacteriology, biochemistry, histology, pregnancy tests, &c., for medical and dental practitioners and hospitals. Outfits of specimen containers are provided on request, and reports are normally sent within 24 hours of receipt of specimens. Full details, with scale of fees, on application to the Clinical Director.

Typewriting Service: Testimonials, Theses, Notes, &c., accurately and speedily typed.—Phone: HAMpstead 7949 after 1 P.M. daily.

Typewriting, Duplicating, Medical Manuscripts, &c. Immediate ser-vice. Satisfaction guaranteed. (EX-R.A.M.C.)—SPECIALIST TYPE-WRITING BUREAU, 30, City-road, E.C.1 (MON. 4881, MAI. 6344).

Wanted, 3 Contax Model III Cameras.—Dollonds (L), 28, Old Bond-street, London, W.1.

A ready market for Microscopes. We pay the highest prices obtain-able for fine modern apparatus.—WALLACE HEATON LTD., 126/7, New Bond-street, London, W.1 (MAYfair 7511).

Adoption of Children.—To overcome the risk inherent in privately arranged adoptions, the Church of England Children's Society, which is a registered Adoption Society, is ready at all times to help those wishing to offer a child for adoption, and who deserve such assistance.—CHURCH OF ENGLAND CHILDREN'S SOCIETY, Old Town Hall, Kennington, S.E.11.

For Sale, Brit. Jour. Surg., vols. 21–27 inclusive, bound; vols. 28–33 unbound. General Index, vols. I–XX, bound. "Atlas of Path. Anat." vol. I, bound; ditto 1931–33, unbound. "Penicillin in Warfare." Also Medical Annual 1933–1945 inclusive (1943 missing).—Address, No. 907, THE LANCET Office, 7, Adam-street, Adelphi, London, W.C.2.

Typewriting.—MSS. and all literary work promptly and carefully executed.—Phone: VICtoria 0869.

1947 Cars available for self-drive Hire from Monday to Friday, £8.—GORDON CARS (LONDON) LIMITED, St. Albans-lane, Golders Green, N.W.11 (opp. Hippodrome) (SPEedwell 4762/3).

Good Microscope wanted for cash. Binocular for preference, but ordinary monocular type entertained.—Canister Lodge, Forty Hill, Enfield, Middlesex.

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